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An Address
ON
VISCERAL PAIN AND REFERRED PAIN.

Delivered before the Oxford Medical Society on Feb. 12th, 1926,

BY J. A. RYLE, M.D., F.R.C.P. LOND.,
ASSISTANT PHYSICIAN AND LECTURER ON MEDICAL PATHOLOGY, GUY'S HOSPITAL.

THERE are problems in medicine which make a general appeal, and others of a more special character which cannot equally attract all minds. In choosing for discussion certain aspects of pain, I have hoped at least to avoid the imputation of specialism, for it would be difficult to conceive of a problem more universal and more appropriate to our art. Whether our inclinations be medical or surgical, or our thoughts cast in a physiological or an anatomical mould; whether our work be academic or more severely practical, there are features of the problem which can hardly fail to claim attention. To seek out the causes, to assess the consequences, and to encompass the relief of pains is for most of us a daily duty. Familiarity cannot—or should not—deprive the subject of its fascination or blind us to its difficulties.

If there is a fault in us bred of familiarity it is, I believe, the old fault of omitting to probe sufficiently deeply into causes; the fault of accepting the fact of common symptoms without explaining them. For this reason my remarks will be confined to a review of the present state of our knowledge of the nature and causes of some more familiar types of pain. Research into the subject does not commend itself to the experimentalist in the laboratory, for subjective phenomena are difficult to pursue in animals, and the varieties of pain which can be reproduced and studied in the healthy human being are of necessity limited. On the other hand, those who are engaged in the practice of medicine or surgery, and have the most frequent opportunities of observing the experiments in pain with which nature herself provides us, are usually so harassed by the exigencies of work that ordered observations are hard to accumulate and still more hard to analyse. Furthermore, the experiments often take months or years to march to their conclusion, and only too frequently they are not concluded at all. I think, however, it may fairly be urged that we owe—as we should do—our most valuable information relating to the mechanism and distribution of pains to the clinicians, and that it should rest with them to direct inquiries in the future, employing ever more careful method, and seeking scientific coöperation whenever possible. With the work of such men as John Hilton, Sir James Mackenzie, and Henry Head to reflect upon we do not lack for inspiration in this country.

It is with some diffidence that I approach the subject of local pain and referred pain in visceral disease, for if the more superficial pains are difficult to elucidate the deeply seated pains are more so. Moreover, the ground which must be covered is wide and beset with controversies. I shall confine myself to a consideration of pain associated with disease of the hollow viscera, for it is doubtful whether the solid viscera are possessed of any sensibility. My argument will be mainly clinical, and I must pray the physiologists and anatomists for leniency whenever my remarks seem to lack that precision which their more ordered sciences demand.

THE MECHANISM OF VISCERAL PAIN.

To begin with, let me recall that there have been two main schools of thought in regard to the mechanism of a visceral pain. The first school, basing its views on the work of Lennander [1] and having the late Sir James Mackenzie [2] as its most vigorous protagonist, concludes that pain is not felt in the viscera, but that it is referred to the somatic tissues supplied by the same segment of the cord which supplies the viscus in question. The latest edition of a well-known physiology text-book still perpetuates this view. The second school, supported by Ross [3] and Hurst [4] and perhaps the majority of physicians, while recognising that visceral disease may be accompanied by referred somatic pain, contends that the viscera themselves are capable of feeling pain in the presence of appropriate stimuli.

I shall endeavour to support the following hypotheses:—

1. That there is a true visceral pain felt by the viscus.
2. That visceral pain is due to an abnormal increase in the tension of the muscular element of the wall of the viscus, this increased tension resulting either from contraction or from a failure on the part of the muscle-fibre to relax adequately in the presence of increased intravisceral pressures.
3. That visceral pain when occurring alone, or dissociable from attendant somatic pains, may be accurately localised by the patient.
4. That referred somatic pain and tenderness—e.g., the viscero-sensory reflexes—and the associated viscero-motor reflexes, although they may accompany a severe visceral crisis of mechanical origin, more frequently express an inflammatory lesion of the viscus.
5. That, when persistent, they invariably express organic disease of the viscus of an inflammatory kind.

I shall illustrate my remarks by referring to painful disorders of the stomach, the gall-bladder, the appendix, the intestine, the kidney and ureter, the uterus and Fallopian tubes, and, finally, of the heart and arteries, but I would first draw your attention to certain general considerations.

Normal Sensibility of Hollow Organs.

If it be claimed that visceral pain is not produced in the viscus it seems pertinent to inquire where the normal sensations peculiar to certain viscera are felt. I have never seen it suggested that these normal sensations are referred to the somatic tissues, nor does daily experience suggest that they are felt elsewhere than in the viscus. The heart and aorta, excepting for the sensations of præcordial fullness and retrosternal oppression experienced during violent effort or emotion, may be said to be insensitive under physiological conditions. In the case of the stomach we recognise the gastric elements of the appetite and hunger sensations, and the sensations of fullness or repletion. These have been clearly related with the tonic and peristaltic activity of the stomach wall, and the work of Carlson [5] and Hurst [4] would seem to indicate that the sensations depend on the state of tension in the gastric muscle-fibre. Of the appendix and gall-bladder we are quite unaware in health. Of the intestine we are aware whenever local distension with flatus occurs. The rectum clearly appreciat e states of fullness, at times of urgency amounting to pain, and most of us would agree that its sensations are deeply and not superficially situated. The sensation of the desire to micturate is felt in the urethra and in the bladder also when it is overdistended. All these physiological sensations are related to increasing pressure on the walls of the viscus and are relieved by evacuation. Menstrual pains are felt locally, but are frequently accompanied by a more superficial sacral pain. It is, however, worthy of note that a state of congestion akin to the effects of inflammation is present in this condition in addition to increased muscle tension, and that no equivalent congestion is present during the normal functional activity of other hollow viscera.

Lennander [1] showed that the abdominal viscera when exposed could be pricked, pinched, cut, or burnt without causing pain, and we are all familiar with the insensibility to these stimuli of a colotomy loop. Waugh [6] has recently shown a similar insensibility in the case of the heart. It is further obvious that

the gastric and intestinal mucosa have no tactile and very little thermal sensibility, for if they had, we should be far more conscious of ingested foods and fluids, of enemata, and of the normal processes of digestion. Hurst[4] and his collaborators demonstrated by experiment the insensibility of the gastric and rectal mucosa to tactile, thermal, and chemical stimuli, and Hilton[7] long ago remarked on the insensibility of the rectal as compared with the anal mucosa. These observations support the contention that, if the hollow viscera are sensitive, it is not their serous or mucous coats but their muscular coats which appreciate the sensations. Those who contend that the viscera are insensitive seem to have paid too little regard to the fact that special organs respond only to special stimuli. Thus the eye appreciates light and not sound; the skin appreciates touch, temperature, and traumatic pains, all of which it is physiologically essential for it to appreciate; the skeletal muscles appreciate position and tension and the strength of opposing forces and (in states of extreme tension) pain, but they are not, I believe, sensitive to cutting, pricking, or burning. There is no reason for the viscera to appreciate tactile or thermal stimuli, but it is vitally necessary for them to appreciate states of fullness and emptiness. By analogy it seems reasonable to insist that the plain muscle of the hollow viscera is endowed with the same sensibility, positive and negative, as the skeletal muscles; in other words, that *visceral sense is muscle-sense*. The sensations of fullness or emptiness are thus parallel with the sensations of posture and tension in a limb. Pain (whether in skeletal or plain muscle) results when tension is greatly exaggerated in one manner or another. The one common factor present in all cases of visceral pain is an increase in intra-visceral pressure and in muscular tension. The relieving factor, whether it be the passage of a gall-stone in biliary colic, the ingestion of food in hunger pain, or the peripheral vaso-dilatation on administration of amyl nitrite in angina pectoris, is invariably a factor which reduces intravisceral pressure.

What further evidence have we that visceral pain is deeply felt and not somatic? It will be agreed that ordinary stomach-ache and intestinal colic give the impression of being felt internally. Those who have experienced severe visceral pains of mechanical origin, such as renal and biliary colic, are agreed that these sensations seem to be deep to the body wall. I think it is also true that the majority of non-inflammatory visceral pains (unless they fall into the group of the severe visceral crises) are but rarely accompanied by reflected superficial pain or soreness, and in the case of inflammatory lesions we may observe, as I shall show, referred somatic pain or tenderness occurring in the absence of local visceral pain, and thus suggesting that the causal processes are not identical.

Guarded though we should be in accepting the observations of our patients as accurate evidence, we must, nevertheless, attach importance to certain "gestures" which they employ in indicating the seat of their pain. These gestures do not, as a rule, apply to a somatic segment, but to the surface-marking of the viscus. Thus, in describing anginal pain the patient places his clenched hand to the sternum as though to indicate a median or aortic origin for his pain, and, perhaps, incidentally, to imply its gripping character. A cardiac pain, on the other hand, is indicated by applying the flat of the hand to the submammary region. The pain of gastric ulcer is indicated with the tips of two or three fingers applied to the mid-epigastric point or occasionally just to the left of this point; the pain of duodenal ulcer by a similar demonstration frequently just to the right of the mid-line. The gesture of renal colic is made familiar by the pictorial advertisements of a certain proprietary back-ache pill; the hand grasps the loin usually with the fingers over the back and thumb in front, as though to imply that the pain requiring subjection is rather more posterior than anterior and deeply situated in the actual position which the kidney occupies. The localisation of pain in gall-bladder and appendicular disease (when there is no confusion due to associated inflammation or gastric and intestinal disturbance) is remarkably accurate. The position of a calculus impacted in the ureter may also be accurately shown when distraction by concurrent renal colic or other symptoms is not too influential. Intestinal pains are less easily localised, but here the actual position of the painful contraction is variable, for intestinal colic is not confined to one spot as is the case with biliary or renal colic. Small intestine pains are usually felt around the navel, and colonic pains between the navel and the symphysis pubis. When, however, obstruction occurs at a more or less fixed point such as the hepatic, splenic, or sigmoid flexures, then the localisation is commonly precise. One of the most recent text-books of physiology, in the very brief references to this subject which it makes, asserts that visceral pain is vaguely and inconstantly localised. I believe that clinical experience teaches otherwise, if only we are careful to dissociate the primary or local from the secondary and referred phenomena.

It will be conceded that the reflected phenomena of visceral disease are best demonstrated in association with the very severe forms of visceral pain or in association with inflammatory disease. The arm pain of angina, the subscapular pain of cholelithiasis, and the testicular pain in ureteric colic are the classical examples of the former group; of the latter the cutaneous hyperalgesia and muscular guarding found in appendicitis or in relation to a chronic gastric ulcer are the best examples. It is worthy of note that these reflected phenomena rarely accompany visceral disease of a functional kind; in other words, that they are generally associated with local organic changes. In the majority of fatal cases of angina pectoris there is found some disease of the first part of the aorta or coronary vessels, and we know that, although the sensation of retrosternal oppression can be reproduced in health by vigorous exercise upon a frosty morning, the arm pain is not so reproduced and, since the vessels are capable of relaxation, local distress is never agonising. In stomach-ache due to extragastric causes I have not found cutaneous soreness or muscular guarding. With the subscapular pains of gall-stones it may be pleaded that the pain is as much an effect of the cholecystitis as of the stones; certainly, an identical subscapular pain occurs in cholecystitis without gall-stones. In the testicular pain of calculous ureteric colic the ureteric mucosa must be ulcerated or inflamed and testicular pain may occur without any attack of "colic." It is upon observations of this kind that we may base the conclusion that *visceral pain expresses a perturbation of visceral function (which may or may not be due to local organic disease), while the somatic phenomena generally express a structural lesion of the wall of the viscus.*

Although his writings would lead one to suppose that he doubted the existence of true visceral pain, I am inclined to think that Sir James Mackenzie latterly accepted the sensibility to pain of the hollow organs, for in a letter which he wrote to me in 1922 he included the following sentence: "It is to answer this question that I have spent a long inquiry and have come to the conclusion that the only known stimulus that produces pain in the tissues which are supplied only by the autonomic nerves is the contraction of muscle." Perhaps we may add the suggestion that a failure to relax in the face of increased pressures produces the same effect—namely, increased tension and so pain in the muscle-fibre.

GASTRIC PAIN.

My interest in the subject of visceral and referred pain was first stimulated by studying cases of gastric and duodenal ulcer. The pain of duodenal ulcer, usually gnawing or aching or described as a feeling of great pressure, occurs when the stomach is in the posture of approaching emptiness, but, through reflexly enhanced tonic action, its muscle becomes and remains abnormally taut. This pain is relieved when the stomach adapts its posture or relaxes to accommodate

introduced food or fluid, or when the "resistance" is withdrawn and intragastric pressure reduced by complete emptying. The pain of gastric ulcer occurs when the tension in certain muscle-fibres, reflexly tautened or structurally shortened by the ulcer, is further augmented by the introduction of food. In cases of ulcer we are frequently told by the patient that these spontaneous pains are accompanied and often followed by local epigastric soreness or hyperalgesia. In a large proportion of cases we discover deep somatic tenderness. In a much smaller proportion we find superficial and deep hyperalgesia (or soreness) of the skin, together with muscular guarding of one or other rectus and exaggeration of the abdominal reflex on one side. These signs are more likely to be demonstrable if the patient has recently had an attack of pain or is in pain at the time of the examination. On the other hand, these signs may persist for days after the subsidence of all spontaneous pain as the result of appropriate treatment in bed, and they may not finally disappear for a week or fortnight. The purpose of these reflexes is surely protective, so why should they only be present when spontaneous pain is present? They disappear completely when the ulcer is healed as judged by the disappearance of occult blood from the stools, and they are not present in cases of established pyloric stenosis. They are, therefore, probably due to stimuli constantly passing from the ulcerated area to the cord, and, although they may be brought to light or reinforced by them, are not directly attributable to the painful contractions in the stomach wall which cause the visceral or deeply seated pain. These reflex signs are more constantly present with the deeper and more chronic ulcers which invade the muscular coat. Although the pain of cancer of the stomach equals or surpasses in severity the pains of gastric ulcer, it is much more rarely accompanied by somatic signs. Thus, while it is difficult to palpate deeply in many ulcer cases on account of somatic tenderness and muscular guarding, in cancer the muscles are often relaxed and the tumour can be felt without causing flinching or pain. I believe this apparent discrepancy may be related to the fact that simple ulcers erode and destroy the muscle-fibres in which the nerve-endings ramify, whereas the growth merely infiltrates between the fibres—a histological distinction which is regarded as of diagnostic import by pathologists when considering the nature of large chronic ulcers. When "guarding" is present in cancer of the stomach it is usually bilateral; in gastric ulcer it is usually left-sided, and in duodenal ulcer right-sided. Pain is referred to the back over the lower ribs, particularly in the case of posterior ulcers eroding the pancreas. Somatic signs are rarely present in simple gastritis, because the lesion is too superficial and does not involve the muscular layer. The following cases illustrate some of the points to which I have referred.

CASE 1.—J. D., male, aged about 50, was diagnosed clinically and with the aid of X rays, test-meal, and the presence of occult blood in the stools as having a duodenal ulcer. On admission to the ward he had deep cutaneous soreness, deep tenderness over the right upper rectus, and the abdominal reflex was exaggerated in the right upper quadrant. The deep soreness was very marked and at times superficial soreness was also present, the patient volunteering the statement that the weight of a book as he read in bed and even that of the bed-clothes was sometimes insupportable. The signs persisted for some time after he lost his pain, but then gradually became less and less distinct. *Deep tenderness was the last sign to disappear, and its complete disappearance coincided with the return of negative occult blood reports from the clinical laboratory.*

CASE 2.—A young man, aged 27, was diagnosed as gastric ulcer at out-patients and the X ray report confirmed, stating that there was a penetrating ulcer of the lesser curvature. On his first attendance he was free from pain and the only sign demonstrable was deep mid-line tenderness in the epigastrium. On his next visit he was actually in pain, and he showed, in addition to the mid-line tenderness, deep cutaneous soreness in the mid-line, left-sided exaggeration of the abdominal reflex, and left-sided guarding.

It is very rare in my experience for superficial soreness, elicited with the head of a pin as Head [8] described, to be present in gastric disease. In distinguishing between a gastric and a duodenal ulcer the horizontal level of tenderness is less reliable than the right or left sidedness of the viscero-sensory and viscero-motor signs.

PAIN IN GALL-BLADDER AND BILE-DUCTS.

The pain of biliary colic is referred to the gall-bladder point, corresponding with the ninth costal cartilage, or sometimes more centrally below the xiphisternum. It is almost invariably a crescendo pain. It is often difficult to dissociate the attendant gastric pain from the true gall-bladder pain. In association with gall-stones and chronic cholecystitis it is not uncommon to find a recurrent gastric pain, often worse at night, simulating the pain of ulcer and dependent upon similar reflex disturbances of gastric motility. The viscero-sensory accompaniments of cholecystitis—whether occurring with or without gall-stones—include superficial and deep soreness in the right upper quadrant of the abdomen, right subscapular and interscapular pains, and tenderness over the middle dorsal spines and along the course of the eleventh right rib. Muscular guarding, amounting in acute cases to actual rigidity, may also be present, and, in subacute cases, exaggeration of the abdominal reflex on the right side. "Shoulder pain," so often referred to as a sign of gall-stones, should be reserved for the description of pain referred along the phrenic nerve to the C.4 area in cases of inflammation involving the under surface of the diaphragm or in diaphragmatic pleurisy. It is best seen in liver abscess and subphrenic abscess and is sometimes an early symptom of a perforating gastric ulcer. I have never met with it in uncomplicated gall-stones or cholecystitis. I shall here give the notes of one case only, that of a medical man, who helped me with careful observations.

CASE 3.—Patient first came under observation on account of severe attacks of epigastric pain of unexplained causation. At the time of investigation he was free from all symptoms. A week spent in thorough investigation by the various modern methods failed to clear up the diagnosis. *The only positive sign was slight tenderness over the fifth and sixth dorsal spines, and the possibility of gall-stones was on this account considered.* A few weeks later I saw him in an attack with a palpable gall-bladder and, on the following day, a rigid right upper rectus and friction sounds below the rib margin. At operation a very much thickened and inflamed gall-bladder filled with stones was found. Some months after the operation he had one further attack of biliary colic, perhaps due to a stone left in the dilated duct. Later still I saw him with troublesome referred pains in the mid-dorsal region unaccompanied by abdominal colic or epigastric pain. I thought that these pains were due to persisting infection in the dilated ducts, and with hexamine the symptoms were at first relieved. Later, however, they recurred and hexamine failed to bring relief. The patient has since written to me in the following words: "One day it occurred to me that this pain was purely a dragging pain and might be due to inability of the liver to get rid of its secretions through a kinked duct. I decided to sleep on my left side. I could not do this before, but the difficulty was overcome. The effect was excellent. I never get that pain now unless I happen to turn on my right side, then it comes next day. I have tried the trick again and again and there can be no doubt of cause and effect . . . ."

It is difficult in this case to decide how far the referred phenomena should be regarded as an effect of inflammation and how far as an effect of mechanical distension of the ducts. In the first instance they were seemingly relieved, as I have seen them relieved in other cases, by treatment directed towards disinfection of the biliary tract. Latterly they were relieved by a simple expedient likely to facilitate evacuation of the duct. Perhaps it is fair to suggest that both factors played their part, just as mechanical and inflammatory factors are shown to buttress one another in promoting the somatic signs of gastric ulcer. Hilton [7] was the first to give an anatomical explanation for the frequent association of subscapular and interscapular pain with diseases of the upper alimentary tract, pointing out the connexions between the nerve-supply to the stomach, liver, duodenum, and pancreas (great splanchnic and solar plexus), and the fourth, fifth, and sixth dorsal nerves.

APPENDICULAR PAIN.

Surgeons will agree that among the varieties of disease collected under the heading of acute appendicitis there are two broad clinical types which it is essential to distinguish. The first is the "inflammatory type" in which, following upon infection of the mucosa or submucosa, there develops general redness and inflammation of the organ with or without obvious pus formation. In this type, in addition to visceral pain, cutaneous hyperalgesia, muscular guarding or rigidity, and pyrexia are commonly present. If reflex signs are carefully sought for they may be found in some of the mildest and earliest cases in which it might otherwise be difficult to arrive at a diagnosis. The second type is the "gangrenous" appendix, which may give rise at first to exceedingly severe visceral pain, but not infrequently with a complete or almost complete absence of somatic signs and pyrexia. In the absence of these signs the diagnosis is sometimes unhappily postponed, and yet it is the type above all others in which early operation is imperative. In either type there may be a sudden disappearance of the visceral pain when the appendix ruptures—a strong point in support of the contention that visceral pain is an effect of increased tension. In the gangrenous type we have a lesion in which not only the lumen but also the circulation of the organ has become obstructed. Possibly the absence or paucity of somatic signs in these cases may be explained by the mechanical nature of the lesion in the early stages and by the ischæmia of the tissues involved in the later stages.

CASE 4.—A medical student aged 22 came to me some years ago with the following history: Three months previously he had had a sudden attack of pain in the epigastrium which later settled into the lower abdomen. He stated that there was tenderness on the right side and round the navel, that he vomited, and his temperature rose to 99·4° F. Forty-eight hours later he was quite well. He remained fit for a month and then had a similar attack in which there was pain and tenderness in the epigastrium. Ten days before he saw me he had had a third attack which started absolutely abruptly at 3 P.M., with pain in the epigastrium which doubled him up and made him feel cold. At 10 P.M. the pain departed with absolute suddenness under the following circumstances. He was on his way home to his rooms and met a registrar from the hospital who told him how ill he was looking. He said: "Yes, I have a bad stomach-ache . . . . No, I have not, it has gone." At no time had the pain been referred to the back, or groin, or testicle. Between the attacks he was perfectly fit in every way, and at the time of his visit to me he was quite free from symptoms. My physical overhaul was completely negative except for showing local deep tenderness at McBurney's point. A radiographic examination of his alimentary and urinary tracts was negative. Bastedo's test produced no localised pain. A week later all tenderness had disappeared and he felt perfectly well. I regarded the attacks as probably appendicular, and told him that at the first sign of any recurrence he was to come up to the hospital. As it happened the next attack started in the middle of the night, the pain was of great severity, and he could not attract the attention of anyone in the house. He came to see me in the morning looking pale and ill. There was no pyrexia, no cutaneous soreness, no rigidity, and only very slight tenderness in the right iliac fossa; the pulse was not accelerated, but as he lay on my couch he preferred to do so with the right knee drawn up. I had him admitted to hospital at once, and Mr. R. P. Rowlands removed a black gangrenous appendix. At its proximal end there was a small thorn impacted in the lumen of the organ. Although appendicular disease seemed more probable, the curiously abrupt onset and departure of pain in the early attacks and their epigastric reference had made me consider the alternative possibility of one of the major colics. With such a history before me now I should hardly dare to await events.

INTESTINAL PAIN.

Intestinal pains are generally griping and rhythmically recurrent, but with partially obstructive lesions in the large bowel the pain may be more sustained. Excepting with ulcerative or inflammatory lesions it is unusual to find cutaneous soreness or muscular guarding in intestinal disease. These signs may be present with tuberculous ulceration of the ileo-cæcal region and with diverticulitis of the colon, but they are rare in mechanical obstructions and in cancer. Head[9] points out that they may be present in typhoid fever, but are absent in lead colic, yet another observation in favour of the suggestion that visceral pain is an effect of muscular tension, while for referred pain or tenderness the added effect of inflammation is necessary.

RENAL AND URETERIC PAIN.

One of my most instructive lessons in visceral pain and referred pain was provided by a personal experience of renal colic. I must apologise for referring to this experience and should hesitate to do so did I not believe that personal records by medical men have a certain value of their own.

CASE 5.—In February, 1922, I began to have attacks of left-sided renal colic and between then and July of the same year, when I passed a small calculus, I had four or five major attacks and about a dozen minor ones. I was satisfied that both the renal pain, which was always crescendo in character, and later the ureteric pain, were deeply situated. At an intermediate stage the latter appeared to me to be just deep to the sacro-iliac joint, but shortly before the stone passed into the bladder it was felt low down in the left iliac fossa. One bad attack was relieved by morphia and atropine when morphia alone had failed. I was told by a colleague that my loin muscles after attacks of renal pain were hard on the affected side and they certainly remained tender for a day or two, after the manner of a muscle which has been over-used. Jolting or gentle thumping of the loin were painful, but deep palpation caused no discomfort. At no time did I discover any cutaneous hyperalgesia. There was frequent referred pain into the left testicle during the long period in which the stone was lodged in the lower end of the ureter, and this occurred quite independently of ureteric or renal crises. There were several bouts of hæmaturia, and red cells and latterly leucocytes were always present in the urine when examined. It seemed to me that the referred testicular pain was an effect of local ulceration of the ureter, although its intermittency suggested that ureteric peristalsis played a contributory part.

I have not encountered testicular pain in cases of renal colic due to an aberrant vessel, and I do not think it occurs in cases of stationary stone in the kidney. It is therefore to be regarded as a ureteric and not a pelvic or renal reference.

URETERINE AND TUBAL PAIN.

The number of obstetric and gynæcological cases which comes my way is small, and I have few opportunities of studying their pains. As with dysmenorrhœa and parturition, so with organic disease of the uterus, back-ache in the sacral area is a common association. Pain down the front of the thighs to the knee, in the area supplied by the eleventh and twelfth dorsal and first three lumbar segments, is an interesting reference accompanying disease of the pelvic organs which I have encountered once or twice, and which Marcus[10] has particularly associated with disease of the tubes, citing several cases of salpingitis and ectopic gestation. Head[11] had concluded that the eleventh and twelfth dorsal and first lumbar were the segments involved in certain uterine cases. Hilton[7] long ago suggested that some of the so-called hysterical pains in the hip and knee might depend upon reference from the pelvic organs, and traced the path of the impulses via the sacral and lower lumbar ganglia to the sacral nerves and obturator.

CARDIAC AND ARTERIAL PAIN.

When we consider the prevalence of cardiac disease it must be admitted that cardiac pain is a comparatively rare symptom. It is, perhaps, more common in functional derangements than in cases of valvular disease or obvious hypertrophy or dilatation. It is felt in the submammary zone and is sometimes accompanied by referred tenderness in the præcordial area.

It is remarkable that our knowledge of the cause of anginal pain has remained so indeterminate that observers of the eminence and experience of Clifford Allbutt and Mackenzie were in disagreement even as to the seat of its production. Clifford Allbutt,[12] Wenckebach,[13] and others have claimed an aortic origin; Mackenzie[2] (attributing it to muscular fatigue) a cardiac origin; and Danielopolu[14] a coronary

origin for angina pectoris. The arguments weigh heavily in favour of an aortic or coronary, or at any rate an arterial origin, for the pain, and in support of this hypothesis we can enumerate: 1. The sternal situation of the pain—over the aorta or base of the heart and not in the præcordial area. 2. Its occurrence as an early symptom of syphilitic aortitis. 3. Its association with aortic but not with other valvular forms of disease, and its association with thoracic aneurysm. 4. Its absence in the majority of cases of myocardial disease and heart failure. 5. Its propagation by actions which cause a rise in intra-arterial pressure and its relief by vaso-dilatation. 6. Its not infrequent association with hyperpiesia before the development of cardiac failure. 7. Its spontaneous relief when the heart muscle fails so that an adequate pressure for the production of the pain can no longer be maintained. 8. Its segmental reference which, as Wenckebach [13] has argued, does not—on the basis of Head's work—correspond accurately with the segments supplying the heart. 9. Its close resemblance to other forms of arterial pain.

It seems reasonable to argue that angina pectoris is due to an increase in tension in the wall of the aorta or coronary vessels, or both, *depending not upon spasm but upon a failure to relax* in the face of the increasing pressures and demands which accompany increased cardiac work. Recent observations have shown that the status anginosus (or sustained anginal pain) is due generally—perhaps always—to thrombosis or embolism of the coronary arteries. We have, therefore, an apt analogy for popliteal embolism in the status anginosus, both being conditions in which *the pain is agonising and sustained*, in which the vessels are structurally damaged by stretching and inflammation, and the parts supplied by the affected vessel undergo ischæmic necrosis. Have we not an equally apt analogy for angina cruris* in angina pectoris, both being conditions in which the patient is "pulled up" and prevented from walking further by *a severe but passing pain from which he is free at rest*—a pain due, I believe, to a loss of resiliency and adaptability in the vessel wall, which is only disclosed when the muscle supplied by the vessel calls for an increased blood-supply? The referred pains are more intense and more persistent in status anginosus than in ordinary angina, just as they are more intense and persistent with an inflamed gall-bladder than after an attack of uncomplicated gall-stone colic. As with angina pectoris, so with angina cruris, we meet with "benign" cases in which the symptoms recur during months or years without any serious developments or in which recovery may take place. I believe that there are "functional" types of both conditions dependent on a neuro-muscular disturbance, and I have notes of cases in which tobacco or emotion seemed to be the underlying cause. When the symptoms depend on local organic disease then only do the graver complications follow. The areas to which pain may be referred in angina pectoris and status anginosus include the left breast, the inner side of the left arm to the elbow or wrist or even into the fingers, more rarely the right arm or both arms, the neck, and the jaw. The segments particularly involved are the last cervical and upper two or three dorsal segments.

PRACTICAL APPLICATIONS OF THE STUDY OF PAIN.

Thus far my remarks have been chiefly concerned with an attempt to support (in the case of each viscus) the hypotheses set forth at the beginning of this lecture. Truism though it may seem, it is now time to remind ourselves that a working knowledge of the causes of symptoms is of great practical importance, perhaps of even greater importance to the physician than a knowledge of the causes of disease. Of all symptoms pain is the most important. In the earlier stages of our education a great deal of time was and still is quite properly devoted to the study of physical signs—that is to say, of the objective evidences of structural disease. But symptoms, being invisible and impalpable, are too often thought to be poor material for class demonstration. In practice we find that only a small proportion of our cases have physical signs; that the development of signs is nearly always preceded by a period of symptoms; and that again and again we have to base our findings on the anamnesis rather than on the physical examination. It thus becomes necessary for us to educate ourselves in methods of analysing pains as accurately as possible, in collecting information about their character, situation, and attendant phenomena, and the factors by which they are intensified or relieved. We have, no doubt, been taught that certain pains have certain degrees and qualities; that the severe crises like angina and renal colic are "agonising" and "unbearable"; that the "spasmodic" types of pain, as Heberden [15] remarked, are peculiarly liable to come on in the middle of the night or the early hours of the morning; that pain in the lateral organs does not as a rule cross the mid-line; that intestinal pains, like the normal peristaltic movements of the intestine, are rhythmical; that certain pains are constantly relieved by certain acts, such as the pain of duodenal ulcer by taking food; that cardiovascular pains accompany effort; that gastric pains are related to eating or fasting. Later we discover for ourselves that many other pains and discomforts, previously but dimly understood, may have their nature revealed by careful analysis, although the most experienced of us must again and again admit defeat. With hospital patients, and with private patients who can afford such luxuries, it is now possible to subject the more puzzling problems to fuller investigation and so to correct or modify an original clinical opinion. The possession of these new facilities should never, however, excuse us from careful clinical inquiry. The "pathology of the living" studied on the operation table is also a valuable corrective, but operation should rarely be resorted to for purposes of diagnosis, and the too frequent employment of the exploratory laparotomy cannot be too vigorously condemned. One of the most important things in studying pain is to endeavour to see the patient when the pain is actually present; in certain circumstances in order to assist diagnosis, it may even be justifiable to take steps to reproduce the pain. It is remarkable how rare are the opportunities in the medical wards of a hospital and in consulting practice for seeing the patient during a bout of pain. Even in general practice the patient often prefers, or is compelled, to seek advice between attacks unless he be very gravely smitten. The more observations we are able to make about a pain the more likely are we to arrive at a correct solution.

There are at least eight reasonable questions which may be put in regard to a visceral pain. These have reference to: (1) situation, (2) extent of diffusion, (3) character, (4) severity, (5) duration, (6) frequency, (7) aggravating factors, (8) relieving factors. We must also inquire about associated pains (deep and superficial) and other associated symptoms. In addition to the usual routine overhaul an examination for the presence or absence of referred signs should always be made in doubtful cases, and this is particularly important in dealing with acute or chronic abdominal disorders. The difficulties with which we have to contend are manifold. They include the limited powers of observation and description possessed by many patients; the "spreading" or exaggeration of certain pains in nervous or debilitated subjects; the minimisation of pain by others; and last, but by no means least, the shortness of life in comparison with the length of our art. In general practice there are better opportunities for seeing patients repeatedly, of observing minutely variations in the behaviour of their symptoms, and of assessing individual physical and psychological reactions to these symptoms. Those of us whose work is of a consulting kind may, on the other hand, have better opportunities for special investigations, for study in the post-mortem room, and for discussion of problems with colleagues. For all

* An alternative nomenclature for the painful seizures of intermittent claudication, employed to bring the condition into line with angina pectoris and angina abdominis.

of us the surgeon, the specialist, and the pathologist from time to time will furnish proofs which have long been waited for, and occasionally a patient with unusual powers of observation may greatly illuminate some particular point of doubt.

GROUP STUDY OF PAIN.

In conclusion, I should like to put to you the suggestion that there is no study more likely to furnish interests and rewards in practice than a concerted study of visceral or other pains. Results will come very slowly, but this need not deter you. No apparatus is required, no laboratory experience is necessary, and yet a valuable piece of clinical research can be pursued if four or more men in one town will set to work to keep and pool their notes of all cases of certain types of pain. Your interest may lead you to investigate headaches or backaches in preference to stomach-aches or heart-aches; or you may elect to investigate several varieties of ache simultaneously. You may discover nothing new in the course of years, and yet you will inevitably clear your own minds on many points which were formerly obscure, and help to establish facts hitherto imperfectly established. In this ancient haunt of learning you are particularly blessed, for you have so many eminent physiologists, pathologists, and anatomists with whom to discuss your difficulties. And finally, even though time or inclination for special inquiry be lacking, each one of us can bear in mind a saying of Hilton's which I am never tired of quoting: "Every pain has its distinct and pregnant signification, if we will but carefully search for it."

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SURGICAL TREATMENT OF CHRONIC DUODENAL AND GASTRIC ULCER:

CHOLECYSTOGASTROSTOMY AS THE OPERATION OF CHOICE FOR INACCESSIBLE GASTRIC ULCER.*

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Diagnosis.

A DYSPEPSIA may be due to many things, but a dyspepsia which has lasted for two years and has resisted medical treatment is a serious matter. Apart from such general conditions as phthisis, it is due to organic disease in stomach or duodenum, either ulcer or malignant disease or both.

"Periodicity" is the great feature of duodenal ulcer, and to a less extent of gastric. Constancy and steady progression in intensity is the great feature of malignant disease. The onset of these latter qualities in a case which already exhibits the former indicates malignant degeneration or implantation. Gastric diseases are diseases of the prime of life, and this is especially so of duodenal ulcer. Women and men are equally effected by duodenal and by gastric ulcer. Duodenal ulcer is more than three times as common as gastric.

Malignant disease is associated with a loss of appetite amounting to a positive aversion to food. Duodenal, and to a lesser extent gastric, ulcer seems to whet the appetite; a man with a duodenal ulcer has his best time, as have most healthy people, after his biggest meal. The characteristic cachexia, the constant eructations and frequent vomiting of malignant disease are only late manifestations.

A dyspepsia due to a so-called chronic appendicitis is characterised by a mixture of the symptoms of duodenal and gastric ulcer, and is often associated with vague pain in the lower abdomen with a tenderness in the region of the appendix, where pressure may give rise to a reflex pain in the epigastrium. I do not pretend ever to diagnose appendix dyspepsia except by a process of exclusion, and that usually at a high exploration where duodenal and gastric ulcer can first be searched for.

Briefly, a duodenal ulcer pain is a "pain" before food and relieved by food, whilst a gastric ulcer pain is a "pain" after food and made worse by food. In the former case the "pain" comes on three or four hours after food; in the latter in half an hour or more. Pain which wakes a patient at 1 or 2 o'clock in the morning is a duodenal pain, and the hour at which it begins depends on the time the last meal was taken.

Symptoms of duodenal ulcer can be, and usually are, obscured by the frequent taking of food or of alkalis; and in writing a history very careful attention must be given to this point; it is never so with gastric ulcer. Possibly this fact accounts for the many cases of duodenal ulcer not recognised until perforation or hæmorrhage occurs. The patient has successfully treated his or her own symptoms.

I think there is no doubt of the seasonal variation in the pain of duodenal ulcer. Spring and autumn are the worst times of the year, but a cold east wind at any time is almost certain to precipitate an attack. Mental anxiety, indoor occupation, and lack of exercise will accentuate an attack of either duodenal or gastric ulcer. A change of climate with a holiday from work acts like a charm in a duodenal case; in few diseases is the patient more inclined to consider himself cured. Irregular meals certainly predispose to, and accentuate, duodenal ulcer, and for this reason it is seen so commonly in members of our own profession.

I have spoken of "pain," but in duodenal ulcer it is not often pain as generally understood; it is rather a vague epigastric or substernal discomfort, with a frequent desire to swallow an apparent œsophageal obstruction; this desire is satisfied by the ingestion of air, and the subsequent eructation of it affords relief. These symptoms increase in intensity as the next meal approaches, and the discomfort may localise itself over the upper part of the duodenum—that is, high up in the right half of the epigastrium—and become an actual localised pain, causing the sufferer to hold his stomach and to bend his body. With these things are associated a feeling of weariness and an irritability of temper so marked that when the patient reaches his home in the evening his one inclination is for rest, both mental and bodily. Pain running superficially along the right costal margin signifies a localised peritonitis due to inflammation, but *not* subsequent to perforation. Vomiting is rare in the uncomplicated case, but if it occurs it is vomiting of an acid fluid which scorches the throat and is swallowed again. Sometimes such a quantity of this fluid is brought up at night that it runs through the nose and soaks the pillow. Hæmorrhage which is overt is a complication. Occult blood in the stools is a sign of ulcer and should be sought for, care being taken to exclude a carnivorous dietary; it is

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more commonly found in duodenal than in gastric cases.

The *physical signs* of duodenal ulcer, apart from pyloric obstruction and hæmatemesis which are complications, are very slight—a highly placed small stomach with a tender spot indicating the site of the ulcer.

Gastric ulcer is a more difficult condition to diagnose; the time of onset of pain is much more indefinite, but is usually earlier after food; the "pain" is more of a real pain than that of duodenal ulcer. It is less periodic and less amenable to treatment by diet and by alkalis. The site of the pain is in the middle line or to the left and along the lesser curvature, but there is a frequent complaint of radiation to the interscapular area. Vomiting occurs more often in gastric ulcer and affords great relief. Hæmatemesis is more common than in duodenal ulcer, but not so common as generally supposed. In my view the "dyspeptic facies," the drawn, tired, grey face is commoner in duodenal than in gastric ulcer. In either condition the patient loses weight during an attack, and gains it in the intervals.

Mention should be made of the dyspepsia due to *gall-stones*. In my view it is never a painful condition except during an attack of colic. It is just a constant "flatulency" after food, with attacks of colic superimposed. In practice the story of the symptoms is sufficient, but one is never happy in suggesting operation without an X ray examination. This is a matter for X ray specialists, and I will only mention what I think are the salient points. A duodenal ulcer case should show a small, actively contracting stomach which empties rapidly; only rarely is the crater of an ulcer or a pouching of the duodenal line to be seen. Fixation of the pylorus without a crater might mean either gastric or duodenal ulcer. A gastric ulcer cannot be diagnosed except by the presence of a crater or the deformity due to organic contraction; fixation of any part of the lesser curvature and accentuation of the incisura are valuable signs. A "filling defect" in the stomach is highly suggestive of malignant disease. The crater of either duodenal or gastric ulcer should be extremely sensitive to pressure. It is obvious that a pyloric stenosis is a sign of mechanical obstruction and is associated with a big stomach. A pyloric spasm is difficult to recognise, but if recognised is a sign of hyperchlorhydria with or without ulcer.

There are many surgeons who will not operate without a Rehfus test—i.e., an estimation from hour to hour or less of the free acid in the stomach. The process of swallowing and keeping the necessary tube is much resented by most patients, and in my view, except as research on gastric secretion, is of small value.

I have thought for many years that the earlier symptoms of ulcer are due to inflammation—a congestion, a hyperacidity, and a spasm of the pylorus, with infection of, and breaking down of, Peyer's patches on both sides of the pylorus. I think the usual big gastric hæmorrhage is a weeping of blood from "erosions" which are broken-down Peyer's patches. I still believe what I said in the Arris and Gale lecture in 1923—that the originating focus is in the last few inches of the small intestine, the appendix, or the cæcum, and that the spread is by lymph vessels reaching the pyloric area by aberrant channels set up by lymph blockade. I think there is no doubt that this conception of the cause of ulcer very materially helps one to estimate the kind of symptoms to be expected and the kind of treatment, both medical and surgical, most likely to be of use. I believe that in the absence of complications, and bearing in mind the possibility of malignant disease in case of a gastric ulcer, it is a reasonable thing to try the effect of rest, diet, and medicine for two years from the definite commencement.

It is no part of mine to speak of the details of gastro-enterostomy or gastrectomy, but rather to indicate some changes which are occurring in gastric and duodenal surgery. Before any surgical procedure is adopted it is assumed that every possible source of infection is explored and dealt with, particularly those in the mouth and nose; examination of the appendix, gall-bladder, cæcum, and the lower part of the ileum is understood to be a part of every operation.

Surgical Treatment of Duodenal Ulcer.

Two chief factors enter into the question: (1) What shall be done with the ulcer? (2) Will a gastro-enterostomy or other drainage operation be necessary or advisable?

There is no doubt something should be done with the ulcer. At the least it should be invaginated by sutures and covered by omental tissue, usually by uniting the gastro-hepatic and the gastro-colic. Two things must be secured: (*a*) the prevention of perforation; (*b*) the prevention of hæmorrhage. Suturing of the ulcer also serves to block the pylorus for a time and possibly gives rest to the ulcer, causing most of the gastric contents to pass through the anastomosis, and allowing the escape of acid juice between meals when the pylorus is closed.

The most usual method of dealing with the ulcer at Leeds is to burn out the centre completely and then suture in the ordinary way. This is done to destroy the highly infective crater and also to ensure a permanent narrowing of the duodenum and therefore a partially functioning anastomosis. Other methods involve complete division of the pylorus; others ligation of the pylorus, and others (Pannett and Finsterer) complete excision of a large part of the duodenum and the pyloric end of the stomach. Finney's operation is practically a wide gastro-duodenostomy, but is described as a pyloric plastic operation.

Practically speaking, a short-circuit operation of some kind is done in every case; sometimes an ordinary gastro-enterostomy; sometimes, as strongly advocated by my colleague, Mr. E. R. Flint, a gastro-duodenostomy. In my opinion a gastro-duodenostomy is to be preferred, assuming the duodenum to be sufficiently mobile or easily mobilised. Gastro-enterostomy, except as a remedy for a mechanical obstruction, is becoming less popular. It has many disadvantages, and its utility as a drainage operation for food in the presence of a patent pylorus is more than doubtful; in fact, the best results are those where, after a year or so, the stomach contents pass wholly, or nearly so, through the pylorus, and the new stoma does nothing except regurgitate bile, pancreatic juice, and duodenal secretion, and drains away superfluous gastric juice between meals.

One is apt to imagine the stomach as a bag hanging vertically and emptying at its lowest point. This is true of the cardia, but the contents of the mid-stomach and the pylorus are carried up along the *lesser* curvature and not at all along the greater, except the stomach be very full. If the pylorus be open the contents will pass through it despite the new stoma. Where this movement of food fails to take place the contents may be jettisoned *at once* through the anastomosis into the small intestine, and a high intestinal intolerance with an immediate, painful, and foul diarrhœa ensues.

Acidity in Relation to Gastric Ulcer.

Before considering the surgery of *gastric ulcer* it would be well to ask what is acidity?

First of all there are considerable doubts as to what constitutes *normal* acidity. Horsley[1] quotes Carlson as saying that there is to some extent a continuous secretion of gastric juice. He says there is no such thing as hyperacidity, because *normal* gastric juice may contain as much as 0·5 per cent. of hydrochloric acid, and the pathological variation is toward *hypo*-acidity. According to his (Carlson's) observations, even "appetite" gastric juice is not essential to good digestion, and perfect health may be maintained with gastric juice of very low acidity. On the other hand, examination of a very large number of cases, probably over 1000, at the Leeds Infirmary and elsewhere in Leeds, shows according to our biochemists that there is a definite and distinctive rise in the amount of free

HCl some two to three hours after food in 80 per cent. of cases found to have duodenal ulcer, though in gastric ulcer there is no characteristic wave at all.

Moynihan, at the Hunterian Society of London in January, 1923, said: "Only 20 per cent. of cases of gastric ulcer show a high normal curve of hyperchlorhydria, but 72·7 per cent. of duodenal ulcers show it." In many cases there is an apparent hypoacidity, and this when well-marked ulceration is found. It would appear, therefore, that hyperacidity, as we are able to recognise it chemically, is by no means always present, but symptomatically there is no doubt it is a most striking feature, and the relief of symptoms of both duodenal and gastric ulcers of the ingestion of alkalis is undoubted.

Donald Balfour [2] says: "While the relation between hyperacidity and ulcer is not invariable, since well-developed ulcers may exist (with a chlorhydria), the fact remains that persistent hyperacidity is one of the most prominent features of peptic ulcer."

I should like to say a few words at this point on the effect produced on the acidity of the gastric and duodenal contents by gastro-enterostomy. There is no doubt whatever—acidity is materially reduced and probably for two reasons: (1) chiefly because bile, pancreatic juice, and duodenal secretion regurgitate through the anastomosis into the stomach; (2) because the new stoma drains away the superfluous gastric juice.

C. H. Mayo [3] says: "In the surgical treatment of ulcer we have applied a well-known principle of agriculture; an acid and continuously wet soil is 'tile-drained' and its surface limed. . . . A gastro-enterostomy overcomes the effects of pyloric spasm preventing retention of gastric secretion after food has left the stomach, and by allowing sufficient quantities of the alkaline secretion of the duodenum to pass into the stomach to lower the general acids."

There is no doubt, then, in his mind that one of the great uses of gastro-enterostomy is a lowering of gastric or duodenal acidity. If it be true that the great reason for doing a gastro-enterostomy is the reduction of acidity by regurgitation of alkaline juices through the stoma, or by the drainage of superfluous gastric juice, then a gastro-duodenostomy would be a better operation and a more physiological one.

Surgical Treatment of Gastric Ulcer.

Now the surgery of *gastric ulcer* has been complicated by one great factor—the possibility of a gastric ulcer or its scar becoming malignant. I say advisedly its "scar," because I believe in the natural healing of gastric ulcer. Controversy is at present raging round this very point, and I think, as in most things in surgery, both sides have gone too far, and the truth is in the middle. I strongly feel that a gastric ulcer should be excised whenever possible, and when impossible it should be cauterised after the method of Balfour, or be dealt with by suturing, but there are many gastric ulcers which are inaccessible to any local interference whatever.

I do not believe that gastro-enterostomy alone is of any real value for a gastric ulcer except possibly when the ulcer is very close to the pylorus, and even for that the best treatment is excision by partial gastrectomy. The operation usually performed until recent years was combination of excision or destruction of the ulcer with a gastro-enterostomy. The modern operation is partial gastrectomy.

Partial gastrectomy may be as easy as gastro-enterostomy, and when easy it has no higher mortality, but taking gastrectomy *in general*, I should say the mortality approaches 8 per cent. even in cases not carcinomatous. It is always a big operation—sometimes a big "adventure"—and is well borne by the patients. The results, in those which recover, are certainly better than by any other method of treatment. It is completed by suture of the cut end of the stomach to the jejunum, the duodenal stump being closed. The value of a big gastrectomy, in addition to removal of the ulcer, is the removal of a large area of acid-secreting musoca. "Sleeve resections," as advocated by Judd and Lyons [4] and by Walton,[5] aim only at a more satisfactory local excision, but do, in fact, get rid of a big area of acid-bearing mucosa.

What is required, if it can be got, is an operation which shall give rest to the ulcer and at the same time neutralise the acidity. No one operation, apart from gastrectomy, can do both. A gastro-enterostomy can reduce acidity, but cannot give peace to the ulcer.

The method of dealing with the *inaccessible ulcer* to-day is by jejunostomy—i.e., feeding the patient entirely by the jejunum to give complete rest to the stomach. This operation is satisfactory in that it does give the patient relief, but I have not known it cure; relapse takes place as soon as the tube is removed and mouth-feeding begins. I have a patient who has had a jejunostomy done three times, each time keeping his tube for two years; he was much relieved, but relapsed as soon as mouth-feeding was commenced. Rest has been achieved, but no reduction in acidity. To most people anything in the nature of feeding through an abdominal tube is most revolting.

Bile in the Normal Stomach.

For a long time I have thought gastrectomy for a simple ulcer a very great mutilation, though I have recognised its efficiency. Some years ago I began to wonder whether bile, pancreatic juice, and duodenal secretion might be a beneficent factor in stomach digestion. One recognises the presence of bile in the normal stomach during ordinary digestion, and one knows of its presence there in large quantities under certain toxic conditions which give rise to vomiting. Might it be that bile, pancreatic juice, and duodenal secretion are utilised as a "protective" fluid, which is, as occasion may require, passed backwards through the pylorus into the stomach? It is also to be remembered that ulceration (except the very rare Curling's ulcer which occurs in bad cases of burns) is not seen in the duodenum at or below the bile papilla.

Glaessner has shown that giving patients sodium cholate reduces a pre-existing hyperchlorhydria. Palfrey found the same result following the administration of salol-coated pills of ox bile. Boldyreff showed by experiment that pancreatic juice and bile regurgitate into the stomach regularly after the ingestion of much fat and in the presence of large quantities of free acid. In his opinion this backward flow of alkaline juices is an attempt to neutralise an unusual gastric acidity. On the other hand, Lonnquist, Wiedemann, Rywosch, Oddi, Dastre, and Smith found by experiment that bile exerted only a small effect, if any, on the reduction of acidity.

All observers noted than an anastomosis of the gall-bladder to the stomach, even when the *whole* of the bile (by ligature of the common bile-duct) was caused to pass through the stomach, had no deleterious effect of any kind (Cannac, Masse, Mocquot, Kehr, Jaboulay, and others). Post-mortem examinations of the animals showed no change whatever in the gastric mucosa.

In 1914 my colleague, Mr. H. Collinson, and I published in the *Journal of Surgery* an account of three cases where the duodeno-jejunal junction was completely divided, both ends closed, and a gastro-enterostomy performed. In all three there was complete tolerance by the stomach to bile and pancreatic juice, which under these conditions must pass backwards into the stomach and out through the gastro-enterostomy opening. One knows the complete tolerance of the stomach to the presence of bile in the many cases of cholecysto-gastrostomy seen and done for obstructive jaundice.

The Rôle of Bile in the Treatment of Gastric Ulcer.

Dr. W. Wayne Babcock [6] was probably the first surgeon to apply the supposed virtues of *bile* to the treatment of gastric ulcer, and to suggest its use for persistent hyperacidity and pyloric spasm. He says: "Contrary to conventional opinion, bile is a normal fluid in the stomach and plays an important but poorly recognised part in gastric digestion. Its entrance into the stomach does not produce nausea or discomfort,

but is associated with the cessation of gastric digestion and the arrest of motor activity of the stomach. Thus at the completion of each period of gastric digestion the pylorus normally relaxes, bile flows into the stomach, and neutralises and permanently arrests the activity of the acid pepsin in the chyme. The antrum of the stomach which has felt the brunt of the irritation of gastric digestion is coated with a protective film of the alkaline mucilaginous fluid, and the peristaltic movements of the stomach cease. We would term bile, therefore, the normal resting medium of the stomach. Were the action of the bile other than soothing its normal presence in the stomach would not so uniformly coincide with the resting period of the organ.

"Even in gastric disturbance with nausea and vomiting the pylorus relaxes and bile pours into the stomach until the entire organ is coated and bile is ejected from the mouth. From the nauseous taste of the vomit it is a common concept that the bile has disturbed the stomach, but it is much more logical to believe that the regurgitation of bile is a protective mechanism of nature, serving to neutralise the offending gastric contents and to soothe and quiet the irritated walls of the stomach. Blue litmus paper having been dipped in bile is more slowly and less intensely acted upon by acid chyme than the uncoated paper. In the duodenum and jejunum the protective influence of the bile and pancreatic juice is shown by many observations. Ulcers of upper intestine are exceedingly rare, except in the first portion of the duodenum, where there is the least opportunity for the neutralisation of the chyme by the bile and pancreatic juice. If by operation we reduce or eliminate the protective influence of the bile and pancreatic juice against the chyme in the duodenum and jejunum, ulceration becomes common.

"Exclusive of non-absorbable suture sinuses, gastro-jejunostomy is followed by ulcer of the jejunum in about 2 per cent. of the cases. When the bile and pancreatic juice are diverted from a segment of the jejunum, as by the Roux gastro-enterostomy, the percentage of secondary ulcers greatly increases. In six out of seven dogs in which Exalto anastomosed the jejunum with the stomach after diverting the duodenal fluids in the colon, jejunal ulcers occurred. It is said that, unlike gastro-jejunostomy, gastro-duodenostomy is not followed by jejunal ulcer. If the bile and pancreatic ducts are transplanted from the duodenum to the upper jejunum by operation, ulcers of the duodenum frequently follow. Therefore, whenever chyme from the stomach enters the upper intestinal tract without sufficient admixture with the bile and pancreatic juices, ulcers are prone to develop, and there can be little question that the latter fluids normally protect the duodenum and jejunum from ulceration. As to the exact elements that cause the ulceration, free hydrochloric acid, acid pepsin, toxins in solution, bacteria or other agents; and the precise protective elements in the duodenal fluids, alkalis, mucus, nucleo-albumin, or other substance, we will not brook unproductive dispute by attempting to name. As surgeons we think it unnecessary to enter the controversy as to whether or not peptic ulcers depend chiefly upon the hydrochloric acid content of the gastric juice."

With such complex fluids it is unnecessary to assume that a single element is entirely responsible for any particular activity. Bread is equally nourishing to the man who does not fully understand its composition, and bile may serve the surgeon not versed in its chemistry. It is important to know, however, that the so-called "peptic ulcers" have a geographical incidence corresponding to areas where the most active chyme has had the least admixture with the duodenal juices, and furthermore, that the operations that have best stood the test of experience in relieving these ulcers (gastro-enterostomy, Finney pylorectomy) are those that best permit the access of duodenal contents to the area of ulceration. The drainage function of the new opening is often negligible. Moreover, it is a striking fact that the efficiency of gastro-enterostomy for ulcer shows a close relationship with the ease of access of the duodenal juices to the ulcerated area produced by the operation. Thus ulcers that lie out of the path of the fluids passing from the new stoma along the wall of the stomach to the duodenum, such as ulcers of the lesser curvature, in a much larger proportion of cases fail to heal after the operation than ulcers about the pylorus. If it be true that it is chiefly the protective film of bile covering the mucosa that permits the average ulcer to heal, then we would suggest that the simple anastomosis of the gall-bladder into the area of ulceration or into the area left after excision of the ulcer (cholecysto-ulcerostomy) be substituted for the more formidable and difficult gastro-enterostomy.

The advantage of such an operation lies not merely in the greater accessibility of structures to be anastomosed, but in the fact that the bile is directly delivered to the part where it is most needed, while the dangers of a secondary jejunal ulcer or the other complications of a gastro-enterostomy are avoided. The continuous entrance of the bile into the stomach does not necessarily produce symptoms. Patients who have had cholecystogastrostomy performed seem to be unconscious of the increased quantity of bile in the stomach. While the bile entering the stomach after a cholecystogastrostomy reduces the total acidity, it does not abolish gastric digestion by completely neutralising the chyme. Although acid chyme is completely neutralised in the duodenum, Dunn's experiments show that the entrance of all the bile and pancreatic juice into the stomach will not completely alkalinise the gastric contents. Of course, the surgeon aims to protect only the irritated areas of mucosa, not to completely alter the chemistry of gastric digestion. Fortunately the normal tendency for the gastric contents to remain in well-defined strata and for fluids entering from new openings to diffuse along mucous surfaces is of aid to the surgeon.

Cholecystogastrostomy.

I knew nothing of any previous work or of any writing on the possibility of the use of bile in the treatment of gastric ulcer until some two weeks ago, when, whilst gathering material for this paper, I came across a paper by F. G. Du Bose, of Alabama,[7] entitled "Cholecystogastrostomy and Cholecystoduodenostomy," wherein he suggests the operation as a treatment for perforated gastric or duodenal ulcer and for persistent pylorospasm due to hyperacidity, but makes no mention of having done it. He says, however, "Probably experience will prove that cholecystogastrostomy is as useful in gastric ulcer as gastro-enterostomy." Following on this I discovered Babcock's still earlier work and a very illuminating paper, An Experimental Study of the Effect of Cholecystogastrostomy on Gastric Acidity, by Dr. Ernest Grey, of Boston, U.S.A. In ignorance of what had already been done and written in America, in December of 1924, whilst watching my friend, Mr. G. Gordon-Taylor, do a difficult gastrectomy at the Middlesex Hospital, I said I thought the removal of such an amount of stomach for a tiny ulcer was a great mutilation, and one must find something as good, or better, and very much easier. I said I intended to stitch the gall-bladder into the stomach and allow bile to flow into it, and do no more.

I have never lost sight of the fact that cholecystogastrostomy brings only bile into the stomach; it obviously does not bring in pancreatic or normal duodenal fluid, but I think the undoubted beneficent effect of bile alone is proved, and it may be more than a simple reduction in acidity; bile may have other powerful qualities in the reduction of gastric disturbances.

In March, 1925, I did my first cholecystogastrostomy for *inaccessible* gastric ulcer. As so often happens with a new idea, this case was a failure; the patient succumbed on the tenth day, but from a suppurative parotitis with thrombosis of the internal jugular vein; the site of operation was found to be quite perfect and there had been no sickness. Since this time I

have done, in all, 18 cases: 16 for gastric ulcer where excision or destruction of the ulcer was impossible or would have been very dangerous, 1 for a recurrent, intractable duodenal ulcer, and 1 for a hyperchlorhydria and pyloric spasm with typical duodenal symptoms. In the two latter cases a cholecystoduodenostomy was performed just beyond the pylorus.

It will be clear that this operation attempts no more than a reduction of gastric acidity. So far as I know, something in addition (possibly a jejunostomy) may be necessary to obtain rest for the stomach, but that is a matter for future consideration.

Results.

You will be interested to hear what the results have been so far: four cases are in hospital now; the others have certainly been most encouraging, though it would be ridiculous to claim anything better than the immediate results of other measures. No single case has suffered in any way from the flow of bile into the stomach. In fact, there is nothing whatever to show that anything unusual has been done.

If it is eventually proved that cholecystogastrostomy gives a better result for inaccessible gastric ulcer than gastro-enterostomy (and I am very sanguine of this); if it is as good as jejunostomy (which I think likely), then I am sure, bearing in mind the drawbacks of both these operations, it may become the operation of choice. I look forward even further, and am sufficiently convinced of the correct physiological character of the operation to hope that it may become the operation of choice for every gastric ulcer and also in the modified form of cholecystoduodenostomy for all duodenal ulcers, where there is no mechanical condition requiring a short circuit.

It would be well to add that those of us who do these things do not imagine that the mechanical processes we carry out end the treatment. We only put the patient on the road to recovery. Every patient is given a dietary, and medicinal measures, aiming at a reduction both of gastroduodenal acidity and of intestinal toxæmia, are recommended.

Something should be said of the results of operation for duodenal ulcer dealt with by treatment of the ulcer and a gastro-enterostomy. About 85 per cent. are cured—i.e., are quite free from symptoms; 10 per cent. suffer from a gastro-enterostomy and modified recurrence of symptoms, and 2–5 per cent. suffer severely from a new ulcer in the gastro-enterostomy stoma.

Gastric ulcer is not so satisfactory. Donald Balfour, writing on the results of treatment of gastric ulcer chiefly by local excision and destruction, plus a gastro-enterostomy,[8] says 826 cases were dealt with; of 85 per cent. traced, 70 per cent. have complete relief, 10 per cent. are improved, and 4 per cent. have no relief.

Since writing this paper, my attention has been drawn to the following extract from a paper read at the opening of the session of the Harveian Society on Oct. 23rd, 1919, by Sir Berkeley Moynihan[9]:—

"There is a general agreement among those who have written upon the subject of the treatment of gastric ulcers that an important part of every method consists in counteracting the normal or the increased acidity of the gastric juice. If this effect is necessary, then the physiological effect of gastro-enterostomy must play some part in causing the good results that do certainly follow at times upon its performance. Whether the partial or complete neutralisation of the acidity is necessary to healing is, however, by no means as certain as is supposed; for in cases both of gastric and duodenal ulcer hypoacidity is sometimes found. According to Friedenwald a reduction of the acidity occurs in about one-fifth of the total number in cases of gastric ulcer, and in my experience in rather more than this proportion of cases of duodenal ulcer. I have little faith in the 'physiological' action of gastro-enterostomy. If the access of bile to the stomach with its alkalinising properties were proved to be of any value, it would surely be better to anastomose the gall-bladder to the stomach, as I have many times done in cases of carcinoma of the pancreas causing obstruction to the common duct."

(*References are given at foot of next column.*)

ISCHÆMIC NECROSIS OF THE HEART

IN A PATIENT TWENTY-SEVEN YEARS OLD.

Clinical Findings by

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THE appearance of numerous papers recently by various authors, notably McNee,[1] Gibson,[2] Coombs and Hadfield,[3] has stimulated interest in the correlation of a fairly typical clinical syndrome with a definite pathological process. The following case is reported owing to the extreme rarity of an ischæmic necrosis of the heart, resulting from atheroma in a patient of 27; indeed, we have been unable to trace a similar one in the literature which deals almost monotonously with the cardiac end-results of senility.

Clinical Findings.

J. B., a man aged 27, had had measles in childhood, but no other exanthem. In 1915 he joined the army and was passed for active service; he was in the East for three years—Egypt, Mesopotamia, and India—and during this period contracted sandfly fever and malaria; the malarial attacks recurred until 1923. In 1917 he contracted syphilis in Mesopotamia and was treated by intravenous injections. In 1919, during a month's leave pending discharge from the army, he first developed nephritic symptoms—headache, backache, dyspnœa, and œdema of the face and legs; he consulted a private doctor who diagnosed nephritis, and referred him to the military authorities. The diagnosis was confirmed after a period of observation in a military hospital, and he was invalided out of the army with a pension for this disability.

The exacerbations recurred, and he was treated in various hospitals: the only notes available are those taken during his detention in the General Hospital from March 20th to May 10th, 1920, and from May 21st until June 11th of the same year. He was admitted with acute headache, vomiting, and diarrhœa, generalised "renal" œdema, the urine was diminished in amount and contained blood, albumin, granular and epithelial casts, with a moderately raised blood pressure. Under the usual treatment the symptoms disappeared and the patient was discharged with only a haze of albumin. These attacks continued to recur, and about Christmas, 1924, anginal symptoms first arose—an acute pain in the præcordial region, shoulder, and down the outer side of the left upper arm, coming on after exertion; the symptoms of renal insufficiency abated somewhat. Latterly the

[1] Quart. Jour. Med., October, 1925.
[2] THE LANCET, 1925, ii., 1270.
[3] THE LANCET, 1926, i., 14.

Chronic Duodenal and Gastric Ulcer: References.

(*Continued from previous column.*)

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anginal attacks have become much more frequent, and their occurrence when climbing the stairs of tramcars during the course of his work as a tram conductor made the patient extremely apprehensive.

On July 20th, 1925, the patient felt very tired, but he went to his work at 4 P.M.; on reaching up to collect his tickets from a shelf he was seized with an agonising pain in the præcordia radiating down the outer side of the left arm. His condition was so grave that he was taken without delay to hospital.

Condition on Admission.—He was seen at about 5 P.M. and presented the typical picture of severe angina pectoris, no organic disease was discoverable on physical examination, and the pain was quite unrelieved by the inhalation of amyl nitrite. He was admitted to the hospital, therefore, as angina pectoris, probably due to coronary apoplexy. Soon after admission morphine, gr. ¼, was given to relieve the pain; the patient's general condition grew rapidly worse, the pain was obviously unbearably severe, and he developed the signs of severe shock and left heart failure—pallor, failing pulse (temp. 96·6° F.; pulse 92; resp. 32), and subnormal temperature. He lost consciousness and died at 9.35 P.M., about five and a half hours after the onset of symptoms.

Pathological Findings.

The body was that of a well-nourished and well-developed young man. The heart weighed 400 g., and was slightly enlarged. The muscle was soft and flabby, but showed no evidence of infarction or fibrosis. The bases of the aortic valve cusps were thickened by atheromatous plaques, which projected inside the semilunar folds as glistening nodular yellow excrescences. The other valves were normal.

The first part of the aorta showed very numerous fatty streaks under the intima, which was distinctly raised over them. In the left coronary artery this change was still more evident, and at a distance of half an inch from its origin the intima covering a mass of fatty material had ruptured and produced an "atheromatous" ulcer, upon which an ante-mortem thrombus had formed and completely occluded the lumen of the vessel. Beyond this point a few atheromatous patches were present, but the finer branches of the artery remained patent. The right coronary artery was normal. In the aorta there were many atheromatous areas over which the intima showed little thickening, and there was no macroscopic evidence of calcification. The intima was slightly wrinkled longitudinally, but did not present the appearance of syphilitic disease. In both iliac arteries and in the left femoral artery there were small atheromatous ulcers covered by firm thrombi. In the arteries of the circle of Willis atheromatous changes were prominent, but not of sufficient degree to cause arterial occlusion.

The kidneys weighed 490 g. each, and were considerably enlarged; the capsules stripped easily and on the smooth surface exposed there were a number of bright yellow flecks of fat, sharply defined from their dark congested background. The glomeruli were unusually prominent. The spleen (200 g.) showed some enlargement, and the capsule showed a patchy thickening with dense and rather hyaline tissue; the Malpighian bodies were prominent, and the splenic artery and its branches showed atheroma. The brain, lungs, and liver appeared normal.

Microscopically the most striking changes were seen in the aorta, the left coronary artery, and in the kidneys. The atheromatous patches in the aorta were composed of fatty débris lying in an intima, which was definitely increased by fibrous tissue formation; the fat stained well with Sudan 3. Seen with the polarising microscope, much of the fat was doubly refractile, and cholesterin crystals were identifiable. In the left coronary artery the same changes were visible, but, in addition, some of the muscle-fibres of the media contained fat which was not of the doubly refractile type. In the kidney the epithelium of many of the convoluted tubules contained fat droplets, mostly doubly refractile, otherwise the kidney changes were those of subacute nephritis. No definite evidence of syphilitic lesions could be detected.

Comment.

In the pathological findings perhaps the most striking features are: 1. The large amount of fatty material present in the subendothelial coat of the aorta and left coronary artery, with comparatively little fibrous thickening of this coat, and with almost no calcification. The absence of compensatory strengthening of the vessel must have expedited an early rupture of the intima. 2. The presence of fat in the muscular tissue of the coronary artery. 3. The doubly refractile fat present in the convoluted tubules. 4. The comparative youth of the subject of these changes.

There was thus a definite nephritis associated with a profound metabolic upset, as a result of which a very widespread deposition of cholesterin and of a special type of fat took place in certain of the larger vessels, and the question arises as to whether some grotesque exaggeration of the early stages of "arterio-sclerosis" (fibrosis of the media) has not given us, by producing premature death, an insight into the pathology of the disease in what might be called the pre-fibrotic phase. The absence of obvious infarction is explained by the short duration of the coronary thrombosis.

Summary.

Death, after a typical subacute or chronic nephritis with frequent acute exacerbations, was clinically due to coronary occlusion, and was diagnosed as such. At the autopsy the picture was that of subacute nephritis with a generalised arterial degeneration of a fatty type, with a terminal thrombosis of the left coronary artery at the site of an atheromatous ulcer.

We are indebted for permission to publish this case to Dr. W. H. Wynn, in whose wards in the General Hospital the patient died.

SOME OBSERVATIONS ON THE TREATMENT OF CHRONIC DYSENTERY.

BY R. E. DRAKE-BROCKMAN, D.S.O., M.D. DURH.,
D.C.M.S. (TROP. DIS.), MINISTRY OF PENSIONS.

THE cases of chronic dysentery on which the following observations were made include both bacillary and amœbic dysenteries and mucous colitis in which no pathogenic organisms were isolated, as well as those cases infested with flagellates such as *Lamblia*, *Tetramitus*, and *Trichomonas*, and the *Spirochæta eurygyrata*. The cases were all pensioners treated in the clinics and hospitals of the Ministry of Pensions and the chronicity of the dysenteries varied remarkably. Whereas many hundreds have been to all intents and purposes cured, a small percentage of cases will require periodical treatment, while there are a few cases which resist every known treatment.

For convenience the cases will be divided into three classes: (1) chronic bacillary dysentery; (2) chronic amœbic dysentery; (3) mucous colitis and infestations.

Chronic Bacillary Dysentery.

The causative agent, *B. dysenteriæ* of whatever variety, has, in the large majority of these cases, long disappeared from the stools. Many hundreds of cultures made from the fresh stools in these cases have proved repeatedly negative to these bacilli. It is true that *B. flexner* has been found on one or two rare occasions, but not *B. shiga*, yet I think there is little doubt that *B. flexner* does lie up embedded in the intestinal wall in the sites of the old ulcers, and from this entrenched position continue the colitis and give rise to the repeated exacerbations of the disease. These are the cases in which the sole manifestations are alternate constipation and diarrhœa with mucus and occasionally blood. It is usually necessary in these cases to continue the treatment over many months with a carefully restricted diet, when no recurrence of the clinical symptoms will take place and a cure will eventually be obtained, but the difficulty is to get many of these patients to stick to a restricted diet for any length of time. Many drugs and combinations of drugs have been tried, among them bismuth, simarubæ et punicæ granati decoctum, intestinal antiseptics such as salol, kerol, and dimol—all with little or no temporary benefit. For some time past I have relied on either stovarsol or the mixture of tr. ferri perchlor. ℥ xx. with liq. hydrarg. perchlor. ½ drachm in ½ oz. of water, to be further diluted when taken

three times daily after meals. This, when continued for months with a restricted diet and given with a nightly dose of liquid paraffin to counteract any tendency to constipation, has proved most efficacious in my hands. In those cases where there is no constipation and the stools are invariably loose I have found stovarsol of great value. It is put up in 4 gr. tablets, and I find that it can be given to out-patients one tablet twice daily for a fortnight, followed by one tablet nightly for the following fortnight without the slightest fear of any ill-effects. Its tonic effects are of distinct value in the treatment of all forms of chronic dysentery, while in the majority of cases it lessens considerably the number of daily motions. It is essential, whatever form of treatment is being carried out, that the patient be given a supply of liquid paraffin to take in the event of a tendency to constipation arising, as is so often the case; 2 drachms to half an ounce of this is recommended to be taken daily after the last meal. I have had little or no success with parathyroid and calcium lactate in the few selected cases in which I have tried them.

Chronic Amœbic Dysentery.

The first thing that strikes one in these chronic amœbic cases is the unusually healthy appearance of the majority of the afflicted. A patient may be passing stools consisting of almost pure mucus and blood and yet have an appearance of well-being. It is no uncommon occurrence for a man to say that he is feeling quite well, when his stool shows active vegetative forms with much mucus and blood. These intractable cases seldom seem to pass on to amœbic liver abscess, doubtless owing to the fact that there is always a free evacuation of the active amœbæ going on. Constipation, more or less chronic, is invariably the precursor of amœbic liver abscess.

An important point in the treatment of these chronic amœbic dysenteries is to avoid pushing the use of ipecacuanha or its derivatives to excess, so as to prevent the amœbæ becoming emetine-fast. This can be done by giving the courses of treatment, notwithstanding the presence of entamœbæ in the stools, at intervals, combined with the general treatment with tonics between the courses. It frequently happens that although the entamœbæ tend to disappear from the stools the latter remain loose and frequent. In some cases the ipecacuanha even aggravates the diarrhœa for a time. The above method of administration prevents the accumulation of the drug and any after-effects which its toxicity might give rise to. Between the courses either stovarsol, yatren, or kurchi may be given for a month, then another course of ipecacuanha if the stools contain cysts, or a month's treatment with cod-liver oil and malt if the stools are free of the cysts. Yatren should be given, three pills thrice daily, for the first fortnight, then two pills thrice daily for one week, followed by one pill thrice daily for the fourth week. It is sold in 4 gr. pills and in powder. This drug has been well reported on by, among others, Muehlens,[1] Menk,[2] Kuenen,[3] and Manson-Bahr,[4] and seems to be more particularly useful in those cases where the sigmoidoscope shows definite ulceration and changes in the rectum, when a 2–4 per cent. solution can be injected and retained in situ for several hours. Under this treatment, combined with the yatren pills per os, good results have been recorded in these particular cases, but when, however, the seat of the trouble is higher up in the cæcum and colon, no drug can at present replace ipecacuanha and its derivatives. Kurchi seems in some cases to be a useful adjuvant, while in others massive doses of bismuth, as recommended by James and Deeks,[5] have been found to have a decided curative effect. In all cases the diet should be kept as low as possible when drugs are given per os so that there is a better chance for them to come into contact with the amœbæ. The treatment outlined above can be carried out in out-patient clinics while the more resistant cases should all be sent to hospital, where the combined emetine and bismuth treatment can be given under supervision. For some time past I have been giving bismuth. subnitras in 30 gr. doses thrice daily combined with 10 gr. of sodæ bicarb., later doubling the bismuth and keeping the treatment on for three or four months with pulv. ipecac. radix in 10–20 gr. doses in cachet at bedtime for the first month or two only.

Mucous Colitis with Infestations.

Among infestations the commonest are the flagellates *Lamblia*, *Trichomonas*, and *Tetramitus*, and *Spirochæta eurygyrata*. Of these, *Lamblia* are most frequently seen, and various forms of treatment have been from time to time advocated for their eradication. Personally, I am inclined to think that they are of little or no consequence, as, per se, they do not cause dysentery, and but little inconvenience. When, however, they are found in combination with mucous colitis following true dysentery they are apt to aggravate the condition. It is known that numerous individuals harbour *Lamblia*, and have never had either dysentery or even severe diarrhœa. After examining many patients infested with *Lamblia*, whose stools periodically show the presence of mucus and blood, I have invariably found that they have at some period of their lives suffered from either bacillary or amœbic dysentery or both.

I could quote cases of men in whom repeated stool examinations over a period of many months or even years have been negative to *B. shiga*, *B. flexner*, and *Entamœba histolytica*, and who eventually have yielded up the elusive *E. histolytica* cysts, and one at least whose fæces gave *B. flexner* after a series of negative cultures. This has led me to try in these cases the methods I have outlined above for the treatment of both bacillary and amœbic dysenteries, and after persevering with them, although *Lamblia* cysts have persisted in the stools, the dysenteric condition has been got under control and finally all signs of clinical dysentery have disappeared. Some of the patients have had regular and formed motions now for months and years and still harbour *Lamblia*.

What I have said of *Lamblia* may be said with greater assurance of *Trichomonas*, *Tetramitus*, and *Spirochæta eurygyrata*. These infestations will gradually disappear as soon as the true cause of the dysentery has been discovered and successfully treated.

As regards the drugs more recently introduced I think that yatren promises to be a most useful adjuvant to our therapeutic armament in the treatment of amœbic dysentery, and it seems to me that it should prove of distinct value as an irrigation following appendicostomy or cæcostomy in those chronic cases unaffected by ipecacuanha and its derivatives. Emetren has been tried without success in a resistant case of chronic amœbic dysentery.

My thanks are due to the Director-General Medical Services, Ministry of Pensions, for kindly permitting the publication of these notes.

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A CASE ILLUSTRATING THE VALUE OF THE SPHYGMOMANOMETER IN CARDIAC DIAGNOSIS.

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A CASE such as is here recorded shows the very important assistance in diagnosis and treatment which may be given by a careful use of the sphygmomanometer.

The patient was a woman, aged about 50, suffering from broncho-pneumonia. Her face was dusky from cyanosis, her head only slightly raised on pillows, and no true orthopnœa, and she was not extremely breathless. By means of the sphygmomanometer the following facts

were ascertained: The systolic pressure as judged by the finger was 138. The range of oscillation of the brachial pulse was good; there was 3 mm. of movement of the Tycos needle at 140, 4 mm. of movement observable between the pressures of 100 and 130 mm. Hg, and at 110 there was an oscillation of 5 mm.

Had there been the myocardial failure of the left ventricle which her condition seemed to suggest, there would have been a low systolic pressure and an oscillation of 2 mm. or less. The above observation, therefore, showed that the muscular vigour of the left ventricle was good, and also that there was good tonic contraction of the peripheral vessels, in spite of the fact that clinically the patient appeared to be threatened with death from heart failure.

On using the stethoscope the following facts were elicited: The systolic sound was not lost till a pressure of 148 mm. Hg was reached—namely, 10 mm. higher than the systolic pressure as judged by the finger, and the loud sound ceased at 140. This practically coincided with the results obtained by the finger. The lowest limit of audibility of the sound was very low—namely, 50 mm. Hg—and a loud sound became audible at 58. The important point about the character of the sound was that between 66 and 138 mm. Hg it was very loud and almost "rapping" or "slapping" in character, and between the pressures of 86 and 110 it was extremely loud and rapping and resembled the sound which is characteristic of Graves's disease.

This type of sound and the low diastolic pressure both suggested that the arteries were badly filled, and therefore if one could have taken a tracing of the artery between these pressures of 100 and 130 we should have found that although the range of oscillation appeared to be good the pulsation of the artery would have been a very collapsing one, resembling the aortic pulse in type.

This study of the blood pressure clearly demonstrated that we were dealing with a left ventricle of good muscular vigour which was being badly filled with blood—a condition very liable to result in fatal syncope, and whose cause must be either a muscularly weak right ventricle or interference with the passage of blood through the lungs. The venous beat in the neck could be felt to be of good strength, the sounds at the tricuspid and pulmonary areas were of good tone though not distinctly accentuated. The liver was enlarged and pulsating slightly. All these facts pointed to a right ventricle of good muscular tone and therefore the cause of the patient's danger must lie in the pulmonary circulation. A relative emptiness of the left ventricle was suggested by the extreme feebleness of its sounds (in spite of the character of the arterial pulsation), by the absence of any palpable impulse, and also the absence of any cardiac dullness except quite close to the sternum.

On inquiry as to symptoms suggestive of asthmatic attacks it was ascertained that they were present, and the general presence of wheeze as well as of moist sounds (suggestive of broncho-pneumonia) confirmed this diagnosis. The case, therefore, clearly called for treatment as a case of asthma and not for cardiac stimulation, which would in all probability only have aggravated the symptoms. Such cases, as a rule, improve rapidly by treatment with stramonium both in the form of smoke from asthma powder and by ℥ 15 or more of the tincture internally every four hours. Sometimes the improvement is quite dramatic in its suddenness.

In the case in question the condition of the lungs was due to pneumonic infiltration complicated by chronic nephritis as well as to bronchial spasm, and the effect of the treatment was therefore much less rapid and effective. Nevertheless, two days later (although the general condition of the patient was showing little if any improvement) the condition of the circulation had changed.

The range of oscillation was now about normal—namely, 2 mm. at 80 and 90 mm. Hg, and 3 at 100, 2½ at 110, and ½ at 120. The systolic pressure as measured by the finger was 120 and by auscultation 126, instead of 138 and 146 respectively two days previously. The diastolic pressure was 60, and the commencement of a loud sound 66 as against 50 and 58 previously, and the rapping sound was much less loud and only heard between the pressures of 76 and 118 mm. Hg. Whereas two days previously the audibility of this sound commenced at 66 and was continued up to 138 mm. Hg. In spite of these figures, which point to weakness of the heart's action, and also in spite of a pulse smaller and weaker than two days previously, the action of the left ventricle was on this date apparently more vigorous. There was a distinct and well-defined apex pulsation about the nipple line and the cardiac sounds audible over the left ventricle were much louder and showed more tone than two days previously. The venous impulses in the neck and the sounds audible over the right ventricle were much the same.

It was, therefore, justifiable to conclude that the treatment had sufficed to lessen the interference with the pulmonary circulation and that the left ventricle was being much better filled than two days ago, but that the patient was now being threatened with death from exhaustion owing to the severity of the broncho-pneumonia, and the nephritis from which she was suffering.

Clinical and Laboratory Notes.

THE LETHAL EFFECT OF ULTRA-VIOLET LIGHT ON NORMAL AND MALIGNANT TISSUES GROWN IN VITRO.

BY WARNFORD MOPPETT, M.B., CH.M. SYDNEY.

(From the Department of Experimental Pathology, Lister Institute.)

THE experiment here described was made as the extension of an observation by Dr. T. Lumsden,[1] that, when cultivated in vitro, normal cells were more susceptible than cancerous cells to temperature, bacterial infection, radium, and ultra-violet rays. An attempt was made to investigate further the effect of ultra-violet light upon normal and upon malignant tissues.

The specimens were exposed at a distance of 30 cm. from a quartz mercury-vapour lamp through a glass cover-slip 0·125 mm. thick. A quartz cover-slip was not used because glass of this thickness transmits sufficient radiant energy of wave-length down to 2300 A.U. from a mercury lamp for this purpose. A rough estimate of penetration was made by taking photographs of the mercury arc with a quartz spectograph with and without the intervention of the cover-slip. The times of exposures producing approximately equal but small density on the plate in two regions of the spectrum, 3000 to 4000 A.U. and 2300 to 3000 A.U., were compared. A definite absorption edge was observed at about 3000 A.U. Above this value eight seconds' exposure through the cover-slip produced the same density as an unscreened photograph having two seconds' exposure. Thus about 25 per cent. of the near ultra-violet and about 3 per cent. of that region between 2300 and 3000 A.U. penetrated to the growing cells. It is possible, however, that the shorter wave-lengths played a considerable part in the effect observed, for they have been shown to be those chiefly effective in destroying bacteria and protozoa, as described by Janet Clark [2] in an article on the Physiological Action of Light. Moreover, a high proportion of these rays would be absorbed by the cells, although only about 3 per cent. of the total energy reached them.

The tissues were grown in ordinary serum of correct pH value as described by Dr. Lumsden,[3] a medium which maintains growth up to a month provided it be changed every few days, ample time for completing an experiment of this nature. The malignant tissues used were the mouse cancer M. 63 of the Imperial Cancer Research Fund and the Jensen rat sarcoma, both of which grow well under the above conditions. The normal tissues consisted of the kidney, heart, and spleen taken from rats and mice a few days old. The best period for experiment is the second or third day of cultivation, as growth is then well established, the cells are young and healthy, and there is a reasonable certainty that apart from any experimental interference they would continue to grow in a normal and healthy manner for the next 24 hours. Cessation of movement and ultimate disintegration of all the cells that had grown out from the fragment and adhered to the cover-slip at the time of exposure was the criterion of a positive effect. Mitosis is unusual and irregular in appearance in malignant tissues grown by this method, so that its cessation is not a suitable standard of injury. When cells have received a lethal dose characteristic changes such as

[1] THE LANCET, 1925, i., 383.
[2] Physiological Review, 1922, vol. ii., p. 277.
[3] THE LANCET, 1924, ii., 65.

shrinkage and irregularity of outline soon become manifest; it is best, however, to record the results 24 hours after exposure since the changes produced are then fully developed.

Two similar pieces of tissue were grown on one cover-slip, one of which was shielded with lead foil. The normal unexposed cells served as a control. After exposure the cultures were not fed till observations were completed. This does not interfere with normal growth, which will continue for several days, and the possibility of re-feeding having affected the growth is eliminated. The slides were kept cover-slip upwards after exposure, since healthy cells which have been shielded by the substance of the fragment frequently grow out among the dead cells, but in the above position of the slide such new cells tend to fall to the bottom of the drop.

Under the conditions of the experiment the carpet of epithelial cells growing from a fragment of kidney was found to be the most susceptible. An exposure of 10 seconds was always a lethal dose. Fibroblasts growing from a fragment of heart muscle required about 20 minutes and the wandering cells from spleen up to 30 minutes. In the case of the Jensen rat sarcoma at least 40 minutes' exposure was necessary to kill every cell adherent to the cover-slip, while mouse cancer was still more resistant, as it required 60 to 80 minutes' exposure to obtain a similar effect. The lethal dose for particular cells was found to be about the same in different experiments, and as an insufficient exposure caused no obvious change it was possible to confirm the observation in the following manner. Normal and malignant tissues were propagated on the same cover-slip and the exposure was graduated to kill the normal tissues present and leave the malignant tissues apparently undamaged.

Conclusions.

It appears that various normal and malignant tissues have different powers of resistance; the kidney is the most sensitive, the heart next, and the spleen cells, which we may regard as comparatively undifferentiated, require a lethal dose approaching that for sarcoma. The malignant tissues, however, are definitely more resistant to ultra-violet light than normal tissues when grown in vitro in this way.

I wish to express my thanks to Prof. C. J. Martin for allowing me to work at the Lister Institute and to Dr. Lumsden, who has instructed me in his method of tissue culture.

OSTEOMYELITIS

OF FIFTY-SIX YEARS' DURATION.

BY G. B. WOODD WALKER, M.A. CAMB., M.R.C.S. ENG.,

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THE latency of bone infections and their tendency to light up as the result of trauma or strain is particularly well illustrated by the following case.

A. W. was admitted to St. Mary's Hospital in 1870, aged 12 years, complaining of a painful red swelling above his left knee. He had been kicked a week previously, he said, by an irate gipsy. Osteomyelitis of the femur was diagnosed and confirmed at the operation when the bone was laid open. He was discharged cured. Subsequently he became a police officer. After 20 years' service, when aged 45, he received a heavy blow on the right arm during a struggle with a drunken man. Following this he was treated for osteomyelitis of the right humerus, from which a discharging sinus remained for the rest of his life.

At the age of 68, no longer a policeman, but still in official employment, he sustained a slight accident in mounting a horse van. The same evening his left thigh became painful, red and swollen, and he felt ill. He was admitted to hospital on the following day. His evening temperature was 103° F.; he was sweating and had nocturnal delirium. A very tender, red swelling just above the left knee (the original site of injury) at the back and outer side of the thigh was evident. The amount of fluid in the knee-joint was increased. The knee-joint was aspirated and turbid fluid was withdrawn. The left femur was exposed and the medullary cavity opened. A large abscess cavity filled with pus and débris was found. The cavity extended into both condyles and for a distance of 2 inches up the shaft of the bone. Staphylococci were grown from the pus.

For a time he improved and his temperature fell to normal, but on the fifth day he died from toxæmia and heart failure. At the autopsy there was evidence of bacterial infarction in the spleen and kidneys and marked arterial degeneration.

It may either be supposed that the infection lay dormant in the left femur for 56 years or that the previously damaged tissues formed a nidus to a subsequent infection. My thanks are due to Mr. Duncan Fitzwilliams for permission to publish this case.

Medical Societies.

MEDICO-LEGAL SOCIETY.

AT a meeting of this Society held on April 20th, Lord Justice ATKIN, the President, being in the chair, a paper on some aspects of the

New Regulations of Preservatives

was read by Mr. C. AINSWORTH MITCHELL.

In the year 1921, said Mr. Mitchell, he had called attention to some of the difficulties met with in the Food and Drugs Act, both by those who had to administer the regulations and those who had to apply them. So diverse was the practice in regard to them that whether or not a conviction was obtained seemed to be chiefly a matter of geography. Local authorities in the past set up and acted upon their own standards. The regulations which would come into force next January would remove some of the present anomalies, but would carry forward some peculiar ones of their own which were likely to cause difficulties. He regretted that the evidence taken by the second committee on the subject was not published in full, as was the case with the first committee. It was difficult to see why boron preservative was not to be allowed; it could not be shown to have been more harmful than saltpetre, which had been in use from time immemorial. As to the use of salicylic acid for beverages, the first committee was misled by a trade witness who said that no preservative was necessary, and recommended that it should not be used in quantity more than 1 gr. per pint; but that witness had been found to be using a large quantity of it in his own products—namely, seven times as much. The second committee allowed the substitution of benzoic acid to 5 gr. per pint. Various deputations waited on the Minister of Health on the subject to point out the difficulties which would be met with in applying some of the regulations, and as a result modifications were issued. These modifications permitted increased proportions of preservatives in fruit pulp, pickles, and sauces. And two preservatives could be present in the same food, provided the regulation quantities were not exceeded. The amount of sulphur dioxide allowed corresponded with the fermentability of the different products. It was allowed in jam, but for some unknown reason it was prohibited in the case of orange marmalade. The regulations did not class alcohol as a preservative, though it certainly was, hence no account of it was taken in fixing the amount of preservative allowed in wine. This matter stood in need of considerable modification. Unfermented grape-juice and non-alcoholic wine made from it were allowed to contain 17 gr. benzoic acid per pint. Lemon squash, though more fermentable than grape-juice and impossible to sterilise by heat, was not allowed to contain more than 5 gr. of preservative per pint. Regulation No. 4 he regarded as a retrograde step; it stood in need of revision. He thought a declaration should be required in all cases in which preservatives were allowed. The objection urged by manufacturers was that such declaration might prejudice the sale of their products, but this was not borne out by the experience of those manufacturers who had voluntarily adopted the practice. Mr. Mitchell did not think that the consumption of beer would be reduced because it would contain three-fifths of a grain of sulphur dioxide per pint. Sweetened mineral waters might contain as much preservative as beer, and ginger-beer more, without the necessity of a declaration. Some of the foods in Schedule 1 should be transferred to Schedule 2. He

anticipated difficulties in applying the regulations in the absence of generally accepted methods of determining the amounts of preservatives. He had urged upon the Ministry some standardisation, but apparently nothing had been done in the matter.

Evidently it was thought that a Ministerial warning on these matters would suffice, but Mr. Mitchell's view was that until the regulations were given statutory force there would be uncertainty as to what was and what was not permissible. The regulations which were to come into operation in January next represented the resultant of conflicting forces, but, on the whole, they could be said to be a great advance on the subject of the due preservation of food consistent with public health.

Discussion.

Mr. E. HINKS (public analyst, Surrey) agreed that the whole matter was a compromise, as it must be, between what was desirable and what was feasible. In the end it would probably prove to be a matter of trial. If these instructions should bring the butter-supply to grief, there must be new regulations, but experience in the past was that what was dreaded did not usually happen. Some articles could easily be put on the market without preservatives, and sausages formed a case in point, except where they were sold long distances from the place of production. He did not think the regulations forbade preservative in marmalade. The regulations, on the whole, were a step in the right direction.

Dr. H. E. COX (public analyst, Hampstead) said there were now on the market sweetened mineral waters containing no preservative, and he thought a result of these new regulations would be that substances would be added to such beverages, constituting a retrograde step.

Mr. F. W. BECK said that for five years he had been fighting local authorities with regard to preservatives in food. He had been opposed to the general setting up of standards for foods, because in the few cases in which that had been done it had been proved to be to the detriment of the public. The law had hitherto been so unevenly administered by local authorities that it was better to have some sort of regulation. There were some borough and county benches who always followed their medical officer in cases of this kind and convicted, whatever the evidence brought forward. He was not sure that the trade felt satisfied with these new regulations, the main reason being that those concerned had not been allowed to know what was the evidence on which they had been framed. The prohibition of boric acid as a preservative was sure to be resented, and in regard to the whole matter he thought the Ministry were embarking on a dangerous experiment. Even if experience demonstrated the need for amendment, enormous damage to industries might occur in the meantime. Cold storage, for this country, was a futile proposition, though efficient on board ship and in large stores.

Dr. M. I. FINUCANE raised the question whether, in the interests of the individual consumer, it was necessary to have any artificial preservatives at all. There seemed no necessity for a scientific society to set trade and commerce on a pedestal.

Dr. KNYVETT GORDON, speaking as a bacteriologist, said one had to choose between having preservatives and bacteria, and he personally would rather have the bacteria. It was impossible to render a meat extract sterile, and in no stage of its preparation could its temperature be raised to the boiling point without spoiling the preparation. If we did not ingest many bacteria every day we should be liable to succumb to every disease which came our way, and these bacteria constituted a more effective protection than most of the vaccines specially inoculated for a set purpose. He did not think preservatives were necessary. The small quantity of formaldehyde used which the regulations coming into force next January would prohibit he was sure had not been harmful, and from the bacteriologist's standpoint it was one of the best preservatives which could be used. He spoke of an epidemic rash he had seen in children due to drinking milk heavily preserved with boric acid.

Mr. E. R. BOLTON (President of the Society of Public Analysts) said the public now knew where it stood in regard to these matters far better than before. Though the committee sometimes skated on very thin ice they had now produced something very definite. Boric acid affected some people adversely, to others it seemed to do no harm. It would have been well if the Ministry had issued a statement as to how the preservatives were to be determined.

Mr. J. R. BLANCO WHITE spoke of the conditions in France and the United States. In the former country less preservatives seemed to be used, while in the States cold storage was almost universal in the cities. One result of these regulations in this country would be that manufacturers of the cheaper articles of food would have to take more care of their products.

Mrs. BLANCO WHITE said that in 1918–19 she was in charge of a Ministry of Labour inquiry into preserved potted meats, margarine, and confectionery. The information given to the inspectors then by manufacturers did not tally with what they more recently tendered to the committee.

Reply.

Mr. MITCHELL agreed that where preservatives could be done without it was advisable to omit them. Cold storage could not suddenly be put up and down the country, and if food did not keep people must expect to pay for it. Salt was a preservative, though not admitted in the regulations to be such, and he predicted that one result of these new conditions would be that certain foods would be heavily salted.

LEEDS AND WEST RIDING MEDICO-CHIRURGICAL SOCIETY.

AT a meeting of this Society held on April 9th Mr. A. L. WHITEHEAD, the President, took the chair, and Dr. GEORGE COOPER (Leeds) read a paper on

Radiotherapy.

Discussing the various conditions that responded favourably to this form of treatment, he spoke of the striking results obtained in lupus by combined treatment by artificial sunlight and local applications of the Kromayer lamp, and claimed that lupus could now be regarded as a curable disease. Very favourable results were also obtained in the treatment of rickets and tuberculous lesions by artificial sunlight, which was also being successfully used to hasten recovery in cases of chronic infection. Considering that only hopeless and inoperable cases of cancer were sent to the radiotherapeutic department, it could be said that a very fair proportion of cases of this disease yielded favourable results. Further progress in X ray therapy would probably come by the use of some sensitising agent before, during, or after X ray treatment. Dr. Cooper showed a number of cases illustrating his paper.

Dr. H. B. SCARGILL (Leeds) exhibited a large number of radiographs and lantern slides from the radiographic department of Leeds General Infirmary, and spoke of the great expansion of radiographic work at the institution during the last seven years.

Dr. L. A. ROWDEN (Leeds) demonstrated X ray photographs of hour-glass stomach, and expressed the opinion that the condition was much less frequently met with than it was 15 years ago. In his opinion the condition was sometimes congenital. In the acquired case he had seen a completely healed ulcer, although the opinion generally held was that a complete healing was rarely, if ever, found.

Dr. J. A. THOMPSON (Harrogate) demonstrated radiograms of the hip-joint showing conditions seen in spa practice. He also exhibited a series of radiograms of a case of aerophagia in a child 8 years old who suffered from chronic intermittent abdominal distension. The photographs appeared to show that

the distension was due to swallowed air which finally passed into the bowel and caused distension of the small and large intestine.

NORTH OF ENGLAND OBSTETRICAL AND GYNÆCOLOGICAL SOCIETY.

AT a meeting held in Liverpool on March 19th Mr. W. GOUGH (Leeds), the President, took the chair, and Miss RUTH NICHOLSON (Liverpool) described three cases of

Carcinoma of the Cervix

in women under treatment for syphilis and gonorrhœa. These cases had occurred, she said, amongst some 1500 patients at two clinics for venereal diseases under her charge for the last seven years. Another case of the sort had been reported by Arthur Helme in 1902. Gordon Luker [1] had described a case of squamous-celled carcinoma of the cervix in a 2-para, aged 28, under treatment for gonorrhœa at the London Hospital, and had remarked that no other case of a similar nature had arisen during the seven years the clinic had been in existence, emphasising the fact that the local treatment may have acted as an irritant. Herbert Spencer,[2] in his Lettsomian lectures of 1920, had stated his opinion that the relation of syphilis, soft sores, and gonorrhœa to cancer of the cervix was close, and that he had twice seen carcinoma of the cervix develop in patients who had previously had chancre of the cervix. These were the only cases which Miss Nicholson had found recorded. Her own cases were as follows:—

1. A single woman, aged 25, known to be a prostitute; no pregnancies. First seen in 1919, when she was being treated for syphilis. She then also had chronic urethritis and endocervicitis. No gonococci were demonstrated in the discharge, but later she developed salpingitis, and they were seen in vaginal smears. The treatment for syphilis was continued, and local applications of protargol and glycerine were used for the cervix for a period of five months. In 1921 she appeared with a recurrence of vaginal discharge. There were then no signs or symptoms of carcinoma. In December, 1923, she complained of intermenstrual hæmorrhage of one year's duration and was found to be suffering from a squamous-celled carcinoma of the cervix.

2. A woman, aged 40, married for 20 years, five pregnancies, all full-time living children, last eight years ago. First seen in 1921, with well-marked signs of secondary syphilis and a doubly-positive Wassermann; no primary chancre seen. No signs of gonorrhœa at that time, and smears from the cervix and vagina negative. She had probably been infected five months previously. She was treated for syphilis, and had had a negative Wassermann and no clinical signs for two and a half years. In February, 1924, three and a half years after infection and two months after her last visit to the clinic, she returned complaining of slight frequency of micturition. Vaginal examination revealed an irregular growth of the cervix, which bled readily. Microscopical section shows a luxuriant papillomatous growth originating from the columnar epithelium, which does not invade the stroma of the cervix, and therefore might be considered benign. The cells, however, are multi-layered, actively proliferating, and irregular in shape. These facts are in favour of malignancy. The closed adherent tubes show that a gonorrhœal infection was also present, and it is interesting to note that a year afterwards, on resuming marital relations, she developed acute urethritis and vaginitis, gonococci being demonstrated in smears from both orifices. Two years after operation she remains apparently free from recurrence.

3. A woman, aged 50, married 29 years; one full-time living child 28 years ago; no further pregnancies. Sent to the venereal department in June, 1925, suffering from tertiary syphilitic ulcers of the thighs. The Wassermann reaction was doubly positive. Urethritis, vaginitis, and endocervicitis were also discovered, and gonococci were found in the urethral and cervical smears. (Subtotal hysterectomy had been performed four years previously.) This patient had intravenous injections of neokharsivan and local treatment for the gonorrhœal infection for two and a half months. She stopped attending the clinic in September of last year owing to "neuritis" and reappeared four months later, in February of this year. She had noticed no discharge or hæmorrhage. On inserting the speculum to examine the cervix a small cauliflower-like mass was felt. The microscopical section showed a squamous-celled carcinoma.

In each of these cases, said Miss Nicholson, the presence of the gonorrhœal infection with its accompanying cervical discharge might have been a predisposing factor in the production of cancer. In Cases 1 and 3 local treatment might have caused further irritation. It was, of course, possible that the primary chancre had occurred upon the cervix in these cases, as it was not seen anywhere else. The youth and nulliparity of Case 1 were unusual with carcinoma, and so made it more probable that venereal infection was a factor.

Dr. H. LEITH MURRAY (Liverpool) described a case of

Carcinoma of the Cervix of a Prolapsed Uterus.

The condition, he said, appeared to be surprisingly rare, this case being only the second he had seen.

Mrs. M., aged 43, gave a history of moderate and not very troublesome prolapse for some years. She had had a family of four, the last eight years previously. She had been under treatment for pulmonary tuberculosis for two years, and was considered to be holding her own; she had not recently lost weight. Her cough, however, was troublesome, and to this was attributed an aggravation of the prolapse, which had occurred during a few weeks before she saw Dr. Murray. During those weeks there became apparent for the first time, so she stated, a protrusion at the vulva, which bled readily and almost continuously.

Examination showed the patient to be thin, but not wasted. At the vulva there was a protrusion about 2¾ inches long, of sloughing, infected, friable carcinoma. The cervix was amputated and radium treatment was given. There was no recurrence of vaginal bleeding, but she died 21 months later, apparently from the lung condition. Sections even of the deepest part of the growth showed intense infection of a very active squamous carcinoma of rather unusual type.

It was of interest, said Dr. Murray, to note that the only case of carcinoma of a prolapsed uterus recorded in the *Journal of Obstetrics and Gynæcology of the British Empire* (by Dr. Russell Andrews in 1910) gave a similarly short history of protrusion, although the length of the uterus in that case made it certain that there had been a visible prolapse for some considerable time. In the present case the cervix itself lay beyond the vulva, and the protrusion was not merely a proliferative cauliflower carcinoma.

Dr. MURRAY also reported a case of

Hydatid Cyst of the Cervix Uteri.

Hydatid cysts of the internal genitalia, he said, were very rare, and some, if not most, of them were undoubtedly due to direct extension from adjacent cysts.

Mrs. S., aged 32, had spent her whole life in a village on the River Dee, and had never, even for one night, been away from home. She did not keep dogs and had no particular liking for uncooked vegetables. In January, 1914, she was admitted to the Hospital for Women, Liverpool, suffering from ascites, and she was later found to have a retro-peritoneal cyst between the right kidney and the liver. This was opened. In November, 1925, she complained of pain radiating from the left of the umbilicus across the right side to the back. This had troubled her for at least ten years, and more recently she had felt when walking that there was a "big lump" in the pelvis. Examination showed a swelling the size of a 16 weeks' pregnancy, the lower pole of which depressed the vault of the vagina. There was a doubtfully cystic area posteriorly but the main mass felt solid.

Abdominal operation was done on Nov. 11th, 1925. Kelly's method of approach, by bisection of the small uterine body lying on the top of the swelling, was adopted, and after the abdomen had been thoroughly packed, an incision into the cervix was made. A cystic swelling with a thick capsule was at once exposed and opened. It was judged to be rather larger than a full-term fœtal head. Very numerous daughter cysts, varying in size from a hen's egg downwards, escaped, and, with difficulty, the cyst wall was then shelled out from the surrounding cervix. After a troublesome dissection, mainly by finger pressure, the whole of the capsule was removed in a single piece. There was no sign of any other cyst in the pelvis, abdomen, or kidney regions. It would have been impossible to remove the remaining thin shell of

[1] THE LANCET, 1922, ii., 71.
[2] Ibid., 1920, i., 530.

cervix, and the cavity, therefore, was reduced by sutures and a subtotal hysterectomy, with removal of both appendages.

There was no doubt that the cyst lay wholly within the substance of the cervix, for a most definite and intact capsule of cervix was visible at the end of the enucleation. Its situation appeared to be in the posterior wall, but the cervical canal was not seen. There were no peritoneal adhesions whatsoever. The patient made an uninterrupted recovery. When seen in March, 1926, she complained of some discomfort in the pelvis, and at examination a little thickening, apparently in the recto-vaginal space, was felt; this was probably inflammatory.

The first genuine case of primary hydatid tumour of the uterus occurring in this country, said Dr. Murray, had been recorded by Giles.[3] De Vries,[4] who reported a case in 1904, found at that time only seven genuine cases in literature. Tittell [5] recorded a uterus the size of an eight months' pregnancy with ovaries each the size of a child's head; all three organs contained an enormous quantity of cysts and hooklets, without evidence of hydatid cyst elsewhere. The present case could not, of course, be compared with those just quoted, except in its suggestion of infection of the uterus through the blood stream rather than the digestive tract.

Dr. ARTHUR GEMMELL (Liverpool) reported a case of congenital absence of the vagina associated with full development of the uterus and appendages and the presence of extra digits. The patient was 18 years of age and hæmatometra and hæmatosalpinx were present. The secondary sexual characteristics were well developed. Absence of the vagina associated with hæmatometra, said Dr. Gemmell, was a rare condition, and he had been able to find only 14 cases in the literature.

Dr. J. E. GEMMELL (Liverpool) showed a specimen of carcinoma of the body of the uterus.—Dr. J. W. A. HUNTER described a case of acute post-partum œdema of the cervix, and Dr. G. W. THEOBALD read a paper on the Toxæmias of Pregnancy.

MANCHESTER MEDICO-CHIRURGICAL AND OBSTETRIC SOCIETY.

AT a meeting of this Society held on April 21st Mr. A. C. MAGIAN, the President, took the chair and introduced a discussion on the

Compulsory Notification of Cancer.

Notification, he said, would show up the enormous number of cases at present unknown to statisticians. Probably many thousands of people died annually without a record of the actual cause of death because the general practitioner was apt to gloss over the matter for the sake of the relatives' feelings. This must not be counted against him, but rather against the system. Notification, however, would prevent an incorrect record of a case of cancer and would also compel early treatment. Early surgical treatment still gave the most successful results. Unfortunately many patients could not get early treatment at the present time owing to overcrowding of the hospitals. Notification, by calling attention to every case, would compel an increase in hospital accommodation, just as compulsory notification of tuberculosis brought about the provision of sanatoriums and clinics for the tuberculous. No doubt it would involve the appointment of many officials and produce friction, and no one would be grateful for its enforcement. This, however, must not stand in the way of a measure for the public good. In addition to compulsory notification, Mr. Magian urged that information on uterine cancer should be posted in all public conveniences for women, and that wherever notices about venereal disease were exhibited similar notices on tubercle and cancer should appear. An additional 1*d.* on the rates would cover the costs of notification and of new beds and would allow patients to have almost immediate attention.

Dr. C. MARLEY-CASS said that compulsory notification would be very hard to enforce and might cause sufferers to conceal their complaint even longer. Any scheme, however, that would really bring about better accommodation and earlier treatment ought to be supported.

Dr. S. W. H. STUART was opposed to any scheme that would lead to an increase in the present army of officials. The work of the general practitioner was becoming a burden to him by reason of the ever-increasing number of regulations and restrictions and the filling up of forms.

Dr. JOHN HOWE thought that compulsory notification would probably be in the best interests of the patient.

Dr. ENID STOWELL, Dr. P. T. CATTO, Dr. HELM, Dr. J. G. SHANKLIN, Dr. OLIVER, and other speakers took part in the discussion.

The PRESIDENT, in his reply, said that practitioners keenly resented the delays in admission to hospital. He believed that the State ought to take over the hospitals and pay the bare costs of administration. The general public should then be asked to subscribe towards the extra cost of good furniture, equipment, and small luxuries. This scheme would ensure hospital accommodation at an early date for every deserving case, and yet would not remove the praiseworthy element of voluntary effort.

ABERDEEN MEDICO-CHIRURGICAL SOCIETY.

A CLINICAL meeting of this Society was held on April 1st, Dr. J. CROMBIE, the President, in the chair.

Dr. A. G. ANDERSON showed two patients. The first was a girl of 12 years with amyotonia congenita. The main features of the case were the extreme flaccidity of the muscles, diminished reflexes, and the possibility of placing the child in fantastic attitudes. She could sit up but was unable to raise herself into a sitting posture when lying on the back. The second was a man aged 21 suffering from pseudo-hypertrophic paralysis. The condition began between the ages of 14 and 15, which, said Dr. Anderson, was rather unusual. There were eight in the family. The eldest was affected, the five next were normal, and the two youngest suffered from the disease. The patient could walk fairly well and was able to pursue his university studies.

Dr. A. W. HENDRY showed a woman of 25 with well-marked signs of acromegaly. She was seen first about a year ago when complaining of headache and fits of an epileptiform nature. These occurred every four to seven weeks. She noted the enlargement of the jaw, hands, and feet when aged 18. No abnormality of the nervous system had been found, but an X ray showed a greatly enlarged sella turcica.

Dr. JOHN CRAIG showed a little girl who developed whooping-cough in December, 1924. There were no convulsions and no unexplained fever, but on getting up in January, 1925, she noticed a weakness of the right hand, arm, and leg. The case was one of undoubted infantile hemiplegia. Dr. Craig mentioned that athetosis was more common in cases of infantile hemiplegia than in adults. The case was shown as illustrating a rare sequel to whooping-cough.

Mr. G. H. COLT showed a female patient aged 20 years who had suffered from a severe non-compound fracture of the right frontal bone. The unconsciousness on admission was not profound and she had bleeding from the right ear. A large trephining operation was done on the night of admission and with the exception of a slight recession of the right eye and a slight inconstant nystagmoid movement and loss of memory for names—but not for faces—she had made a very good recovery. The question of compensation was discussed at length.

[3] THE LANCET, 1911, i., 1700.
[4] Quoted in discussion of Giles's paper (Proc. Roy. Soc. Med., April 6th, 1911).
[5] Arch. für Gynäk., 1907, Bd. lxxxii., p. 180.

Reviews and Notices of Books.

ARABIAN MEDICINE AND ITS INFLUENCE ON THE MIDDLE AGES.

By Dr. DONALD CAMPBELL, late Captain, Royal Army Medical Corps. London: Kegan Paul, Trench, Trübner and Co., Ltd. 1926. Vol. I., pp. 208; Vol. II., pp. 235. 21*s*.

THIS painstaking book is a desirable acquisition to the store of works on medical history in English. So far as we can recollect the only other work on this subject in our language is that by the late Prof. E. G. Browne in his FitzPatrick lectures for 1919–20, a review of which appeared in our issue of August 6th, 1921. These lectures were a brilliant sketch of a period of medical history which is full of romance; while Prof. Browne treated it mainly from the picturesque, Dr. Campbell writes from the scientific point of view. Indeed, the two books may be likened to a drawing by Turner, say, the water-colour of Rouen in the National Gallery, contrasted with a sketch of the same by some strictly accurate architectural draughtsman.

The first volume is an elaborate survey of Arabic medical writings and writers in both the Eastern and Western Caliphates, and of their influence upon European learning, while a whole chapter is devoted to the Latin translators and the College at Toledo; another chapter gives a list of Arabic medical MSS. of Greek authors extant to-day. It is curious that, in speaking of Rhazes and his Liber de variolis et morbillis, Dr. Campbell does not mention Mead's translation into English (1747), although he does refer to Greenhill's (1848). We imagine that the Latin translation, which Dr. Campbell mentions as appearing in London in the same year, was that which Mead caused to be made from the Arabic by Dr. Thomas Hunt, professor of Arabic in the University of Oxford. Dr. Campbell's second volume is, perhaps, even more valuable for purposes of reference than the first, for it is made up of a careful list of translators into Latin of Arabic medical works, and a complete reconstruction of the Galenic Library as it was known in the Middle Ages. This piece of work will be a standby for medical historians. We suggest that in a future edition Dr. Campbell should always specify where a work attributed to Galen is spurious, as, for instance, the treatise De Dinamidiis. We are glad to see that the De Ingenio Sanitatis is rightly stated to be an alternative name for the Methodus Medendi, instead of the De Sanitate Tuenda, which is often given. In Nos. 126 and 205 of the catalogue there seems to be confusion as to the treatise called De Interioribus Membris or Anatomia Interiorum and the treatise De Anatomia, of which Dr. Campbell says that Greek MSS. are known. The treatise called De Interioribus Membris was probably written in Latin in the twelfth century and is often ascribed to Ricardus Anglicus. It was fathered on Galen because the prologue begins "Galienus testatur or Galieno testante," and it was therefore catalogued under Galen in European library catalogues. The old British Museum catalogues have it so, but not the present one. The De Accidenti et Morbo (No. 204) is unknown in Greek and is probably not genuine. The late Dr. Frank Payne conjectured that it might be a compendium or abstract of several books about symptoms such as the De Morborum Causis and De Symptomatum Causis. We have noted a few misprints—e.g., Vol. I., pp. 121 and 122, Chartres is spelt Chatres. In Vol. II., p. 148, De doloris capitis should read De Dolore, and on p. 189, De voce et angelitu should surely read De . . . anhelitu.

Dr. Campbell has done a fine piece of work, and the copious bibliography testifies to his industry and thirst for research. No such work can be original. The ideal medical historian would have to be an Arabic, Syriac, Greek, and mediæval Latin scholar, and in addition an expert palæographer; the equipment is too vast and various for one author. As Dr. F. J. Payne, himself an expert, said: "The whole subject of Mediæval Medical Literature is very interesting and has never been worked out thoroughly. It could only be done by studying the MSS. and comparing the different *groups* of versions which appeared at different times, and were found collected together in the same MS. The association of these versions is by no means fortuitous; but shows what books were adopted as text-books, and hence transcribed into the compendiums which were used by students, and taken away by them from Montpellier and other schools to different parts of Europe." Dr. Campbell's book is a most valuable gathering together of present-day knowledge.

CANCER OF THE RECTUM.

By W. ERNEST MILES, F.R.C.S., Senior Surgeon to the Cancer Hospital and Surgeon to the Gordon Hospital for Diseases of the Rectum. London: Harrison and Sons, Ltd. 1926. Pp. 72. 7*s*. 6*d*.

THE Lettsomian lectures delivered by Mr. Miles in 1923 have been reprinted from the Transactions of the Medical Society of London in book form. The first lecture deals with the pathological anatomy of cancer of the rectum and its early spread, and expounds views based upon a very large experience. The second lecture describes clinical features of the disease and the general principles of treatment, and the thesis is that any operative attack from below is doomed to failure in the light of facts brought out in the first lecture. Mr. Miles's own experience in perineal excision of the rectum has been wholly unsatisfactory. The third lecture deals with the abdomino-perineal operation of which he has long been the exponent. The mortality, it is interesting to note, has been diminished enormously of late years. The author attributes this to the employment of spinal anæsthesia. The book should be read by all surgeons who operate upon such cases.

LIGHT AND HEALTH.

By M. LUCKIESH and A. J. PACINI. Baltimore: Williams and Wilkins Company; London: Baillière, Tindall and Cox. 1926. Pp. 302. 22*s*. 6*d*.

A BOOK on biophysics that is designed for "general readers, mothers, nurses, public health officials, and others interested in health" has several obstacles to surmount. The technicalities of language are, perhaps, the least of these. The greatest stumbling-block to an author who would popularise science consists in the fact that the general reader, untrained in scientific method, cannot by himself distinguish an attractive hypothesis from a generalisation that is well substantiated by experiment. The authors plead that "a book of this sort will have little pioneering value if the authors did not venture beyond the definitely known, for conjectures are the lines of communication between the known and the unknown." Unfortunately, the reader is not often informed in the text when these excursions along the lines of communication are in progress, and, indeed, the critical reader will be tempted to wonder whether the authors themselves are always fully aware of their own boldness. The confidence with which they assert, on evidence that might well be conclusive to the general reader but is not impressive to the immunologist, that athletes in training have a greater immunity to typhoid fever than non-athletic bookworms (p. 219) is a case in point. Their suggestion, in this case it is at least plainly a suggestion, that the increase of pneumonia and influenza in the winter months occurs because we are then more anæmic from want of sunlight shows their bias. Their faith in the New York Italians' taste which, they assert, was able to distinguish the absence of vitamins in spaghetti that had been dried indoors rather than on the fire-escape (pp. 239, 240) is typical of their enthusiastic admiration of ultra-violet light.

On the other hand, their ideas on the physics of radiant energy are stimulating, also the later chapters on the physiology of light and the practical value of various systems of lighting. Experts in these subjects will use their own knowledge and experience as a safeguard against the authors' enthusiasms, while the general reader who seeks a new and not necessarily orthodox point of view will find it here.

THE EFFECT OF FEVER ON METABOLISM.

Untersuchungen über den Stoffwechsel des Kindes im Fieber. By Prof. W. BIRK (Tübingen). Berlin: S. Karger. 1926. Pp. 104. M.7.

IN this monograph the author sets out the result of research which he undertook on the effect of fever on the metabolism of protein and salts in children. Previous work on the subject is reviewed, one of the objects of the investigation being to test the validity of Naunyn's expression "toxogenous protein-destruction." An account is also given of the rôle of the autonomic system in regulation of temperature and of the metabolism of albuminoids and salts, the propinquity of the centres governing these functions being indicated. The results obtained by estimation of nitrogen and salts in the food and excreta are tabulated and their interpretation is fully discussed. Disturbance of nitrogen balance was found even in the pre-febrile stage in most cases, but it was not always a loss, nitrogen retention being by no means uncommon. Among other conclusions to which the author was led are the following: the loss of albuminoids is not a direct consequence of the pyrexia, as Naunyn supposed, but is due to a toxic disturbance of the cerebral centres regulating protein metabolism. Nitrogen loss is a constant accompaniment of the febrile stage, and is probably due to temporary undernutrition; no relation could be found between this loss and the weight curve. In the post-febrile stage a loss of nitrogen or a diminished nitrogen retention was found.

OUTLINE OF SURGICAL NURSING.

By S. J. WOODALL, M.A., M.R.C.S., L.R.C.P., D.P.H. London: Law and Local Government Publications, Ltd. 1926. Pp. 176. 5*s*.

THIS outline of surgical nursing appears to be a reliable little book and will doubtless be of use to nurses. There is little to find fault with and a good deal to commend. The method recommended for administering rectal saline and the apparatus depicted we should like to see more generally used. There is no reference in the index to proctoclysis or rectal saline administration. There is a slip on page 81, where a nurse, after preparing her hands for taking part in an operation, is enjoined to cover her hair completely with a sterile cap and mask, secured by tapes at the back of the head. Few nurses are likely to do this without contaminating their hands, and it would appear to be the business of an assistant.

JOURNALS.

JOURNAL OF PHYSIOLOGY. Vol. LXI., No. 1. 1926. London: Cambridge University Press. Pp. 150. 12*s*. 6*d*.—This journal is now edited for the Physiological Society by an editorial committee composed of E. D. Adrian, A. V. Hill, J. B. Leathes, and Sir C. S. Sherrington (chairman). The first 27 pages of this issue are devoted to an article on Prof. John Newport Langley, who for over 30 years was editor of the journal, and an account is given of his life and work and a full list of his publications—over 170 in number—on work begun in 1873 and continued without intermission until his death in November, 1925.—The Effect of Stimulation of the Vagi on the Pyloric Region of the Stomach, by E. D. McCrea and B. A. McSwiney. Dissection of the anterior vagal trunk and its hepatic branch in man, dog, and cat show that the strands given off to the pylorus contain vagus fibres. The authors found that the hepatic branch of the vagus in cats and dogs supplies and regulates the pyloric region and that the movements of the isolated pyloric region are similar to those observed in the pars pylorica of the intact stomach. The pyloric region does not exhibit the property of postural adaptation.—The Influence of Exercise on the Inorganic Phosphates of the Blood and Urine, by R. E. Havard and G. A. Reay. As it is very probable that a hexose phosphate, lactacidogen, plays an important part in muscle contraction as the precursor of lactic acid, the authors sought to determine how far the inorganic phosphate of the blood is affected by the changes taking place in muscle. It was shown that after short, vigorous, unaccustomed exercise the inorganic phosphate in the blood first rises a little above, then falls considerably below, the normal value in men. In men in athletic training and taking exercise regularly this fall below normal is much less marked. There is a sudden, fleeting, but very marked increase of inorganic phosphate excretion in the urine for about three-quarters of an hour after short, vigorous exercise, followed in some cases by suppression. There is a less constant but occasionally very marked increase of ammonia excretion. There is a very marked suppression of chloride excretion during the same period. It is thought probable that the changes observed in blood phosphate are due mainly to changes in the lactacidogen content of the muscles. The changes observed in the urine seem to be due mainly to the fleeting acidosis caused by the lactic acid formed.—The Impulses Produced by Sensory Nerve-endings, Part I., by E. D. Adrian. The author has recorded the action currents accompanying afferent impulses in the frog's sciatic nerve when the gastrocnemius is stretched by a weight, and has also obtained records from the cat's internal saphenous nerve, from the cat's and rabbit's vagus when the lungs are inflated, and from the cardiac depressor nerve of the rabbit. Probably many of the oscillations observed represent action currents in a single nerve-fibre, and these have the same general form and time relations in all the sensory nerves in which they can be isolated sufficiently for measurement. There is no evidence that an increase in the stimulus increases the size of the action currents in single fibres, but the frequency of the impulses in the nerve trunk increases and leads to interference and overlapping of impulses in different fibres. When a muscle is stretched by a weight the discharge of afferent impulses continues for as long as ten minutes, provided that the tension is maintained. Similarly the passage of the impulses up the vagus continues (for as long as 20 seconds) if the lungs are held in the expanded state. No evidence was found of any renewed discharge of impulses in the vagus on deflation of the lungs.—The Elasticity of Skeletal Muscles, by J. Lindhard and J. P. Möller. The coefficient of elasticity of the excised sartorius of the frog, when resting and excited, was determined. Excitation decreased the coefficient. The decrease took place rather suddenly, while the original resting level was regained gradually and independently of the simultaneous changes in length.—The Interpretation of the Electromyogram of Striated Muscle during Contractions set up by Central Nervous Excitation, by J. G. Dusser de Barenne and J. F. G. Brevée. In the decerebrate cat the cervical spinal cord was laid bare and by mechanical stimulation, once or twice a second, of the dorsal surface "tetanic" contractions of striped muscle—e.g., triceps brachialis—were elicited, accompanied by frequent and irregular action currents. The frequency of these varied in different individuals from 100–200 per second; 160 may be regarded as the average. They resembled closely the action currents led off from striped muscle under other forms of central innervation, such as voluntary contraction in man, the respiratory contractions of the diaphragm, and decerebrate rigidity. In the same

individual the frequency of the action currents under central innervation is the same for different strengths of contraction. What differs is their amplitude; this is larger in vigorous contractions and smaller in weaker contractions. In nearly all the experiments no appreciable diminution of the frequency of the action currents of the contracting muscle after section of the posterior roots could be observed. By producing with novocaine a local narcosis of the sensory spinal mechanisms, and thus cutting off the centripetal impulses upon the motor neurons, the frequency of the action currents was distinctly reduced. With increasing narcosis the frequency gradually became lower until there were only 50 to 70 action currents per second. At the same time the irregularity of the normal electromyogram gradually disappeared until a very regular type of action currents, often a true sinusoidal rhythm, occurred. These slow and regular action currents represent the "proper" rhythm of the impulses of the motor neurons, free from the various centripetal impulses, which play normally upon the neurons and give rise to the irregularity seen in the normal. The electromyogram of striped muscle during contractions of central origin is a true image of the central impulses reaching the muscle from the central nervous system along the peripheral motor nerve-fibres.—On the Factors Concerned in the Production of Pulmonary Œdema, by R. K. Lambert and H. Gremels. A dog's heart-lung preparation was used, the circulating fluid being defibrinated dog's blood. Œdema supervened rapidly (½–1 hour) if defibrinated blood which had stood for 24 hours was used or if metallic poisons were introduced into circulation. Degenerative changes occurred in capillary endothelium of lungs and heart. The œdema in its initial stages was unattended by changes in resistance of blood flow through lungs. The authors suggest that toxic action of blood may be partly responsible for pulmonary or cardiac œdema observed clinically.—The In Vivo Permeability of the Red Corpuscles of the Rabbit, by J. T. Irving and H. D. Kay. An attempt has been made to determine whether the administration of insulin to the rabbit brings about permeability changes in certain of its body cells. In preliminary experiments the partition of sugar or, better, reducing substance between the corpuscles and the plasma was determined before and at intervals after the injection of insulin. The reducing substance in the corpuscles did not decrease in a manner parallel with the decrease in plasma "sugar" during the hypoglycæmic period. Can any changes in the permeability be brought about by insulin injected in vivo? It was found that in the blood of the normal rabbit only a relatively small proportion—0·02 per cent. reckoned as glucose—of the reducing substance is present in the corpuscles. Addition of anti-coagulants—sodium citrate and others—to shed blood alters fundamentally the permeability of the corpuscular membrane to reducing substance. The amount of reducing substance in the rabbit's corpuscle in vivo is both relatively and absolutely increased by previous injection of insulin, of "inactivated insulin"—i.e., insulin rendered no longer capable of producing hypoglycæmia when injected into rabbits, but otherwise changed as little as possible—and of peptone solutions. It is almost certain that glucose is still present in rabbit's blood at the stage of hypoglycæmia at which convulsions occur. Until a pure substance of definite chemical composition is isolated the name "insulin" cannot be precisely used, and may cover a number of factors beside the one producing hypoglycæmia.—On the Nature and Significance of Vagus Escape, by R. J. S. McDowall. Isolated observations of other workers have suggested that vagus escape may be due to increased blood pressure in right side of heart. Experiments on anæsthetised cats showed striking rise of venous pressure on vagus stimulation; after a brief period heart was markedly accelerated. If the rise in venous pressure was prevented, vagus escape did not occur.—The Action of Adrenalin and Ergotamine on the Uterus of the Rabbit, by J. H. Gaddum. The effects of these two drugs on rabbits' uterus—pregnant and non-pregnant—were studied on parts of the organ suspended in a bath of Ringer's fluid.—The Relation of Secretin Formation to the Entrance of Acid Chyme into the Small Intestine: the Properties of Secretin, by J. Mellanby and A. St. G. Huggett. An account of this paper will be found on p. 920 of this issue of THE LANCET.

THE INDIAN JOURNAL OF MEDICAL RESEARCH for January, 1926, records an accomplished activity in the investigation of clinical, pathological, and sanitary problems in which India may well take interest and pride. Shortt, Bairand, and Craighead describe and illustrate a massive infection of the pharynx of *Phlebotomus argentipes* with *Herpetomonas donovani* eight days after feeding on a kala-azar case.—Hutchinson's well-illustrated and informative paper on photography from the microscope is timely, in view of the growing habit of microphotographic illustration, and its not infrequent failure to illustrate.—Cornwall and Beer, studying paralyses after treatment with antirabic vaccine, find that fresh normal nerve substance is toxic to both rabbits and men when injected subcutaneously; some showing paralysis after less than 20 mgm. per kilo body-weight, others tolerating easily 1 g. per kilo. Phenol renders the nerve substance slightly less toxic. It is desirable to be able to increase the dose of the antigen, and it is more practicable to neutralise the toxicity of the vehicle than to separate the antigen from it.—Greval and Row give a careful account of the first case of undulant fever diagnosed and treated in Aden.—Mundaliar, Raman, and Menon describe a case of kala-azar in whom the infection must have been acquired on the *west coast* of India. They suggest that the geographical distribution of kala-azar in India requires revision.—Covell, using the Clayton Lane technique in a hookworm survey of the troops in Dehra Dun, finds the Gurkhas' infection twice as high as that of the gunners and drivers recruited in the Punjab. It is suggested that a hookworm survey of all Indian troops be carried out, using, for diagnosis, Clayton Lane's method of direct centrifugal floatation; it is easy, rapid, and accurate; and for mass treatment beta-naphthol.—Sinton, from his studies in malaria, with special reference to treatment, concludes that, in the malignant tertian malaria of Northern India, 30 gr. quinine daily for one week, combined with alkaline treatment (mist. sodii bicarb. gr. 60, sod. cit. gr. 40, calc. carb. gr. 2½, aq. ad. 1 oz.) cures at least 80 per cent. of cases, and that patients infected with *P. falciparum* are much more easily cured by the same doses of quinine than are those infected with *P. vivax*. He found little or no advantage was gained in the diagnosis of uncured malarial infections by provocative infections of adrenalin or strychnine.—Arland describes the remarkable rejuvenescence of body and mind, and the sexual recovery, observed in two aged, decrepit, tremulous, and sexually unresponsive Busrah "country" dogs, after vaso-ligation.—Brahmachari records a case of hæmoglobinuria in a boy, aged 14 years, whose peripheral blood and liver puncture smears revealed L.D. bodies and no malarial parasites. Hæmoglobinuria began six hours after oral administration of 8 gr. quinine, and increased and diminished concurrently with the fever paroxysms. There was a large hard spleen, and fever intermittent with double rises every 24 hours. When the hæmoglobinuria was passing off, the blood from liver showed distinct hæmolysis; at the same time the peripheral blood showed very faint hæmolysis, and the urine very slight hæmoglobinuria. In the liver, therefore, there was active hæmolysis, as in the case of quinine hæmoglobinuria previously recorded by him and Sen. This is the second case in which he had found hæmoglobinuria in kala-azar. The whole volume of 26 papers, all of high standard and interest, by various authors, some only of whom have been mentioned above, may confidently be recommended, especially to all engaged in tropical medicine.

THE LANCET.

LONDON: SATURDAY, MAY 1, 1926.

ECONOMY BILL: SOME MEDICAL ASPECTS.

THE Budget figures put forward with great clearness by the Chancellor of the Exchequer show the difficulty of securing a credit balance in national finances—and that without taking the coal menace into consideration. Thus those who demur at any processes of economy should show grounds for a belief that the particular measures for saving will result either in waste of previous efforts on which money has been spent, or in an increase of expenditure in the near future. On both these grounds many of the medical profession view with apprehension certain sections of the Economy (Miscellaneous Provisions) Bill. Various amendments brought forward when the Bill was in committee, pleading for the omission of clauses which might be worked in a manner prejudicial to health, were rejected by large majorities, voting being practically on party lines. The medical profession recognise as good citizens that money must be found with which to carry on, and it is to be hoped that some of the forebodings expressed in the amendments will not prove true, and that valuable activities in behalf of public health, of the health of children especially, will not have to be curtailed until their utility is gone. Anything like a supervision of local education which allows, for example, the spread of ringworm through relaxation of the methods for its control will be deplorable, even though it can be supported by some calculation of averages extending over and applied to various areas.

In one of the debates Sir JOHN SIMON told a story of a treatise by a learned continental physician. In the body of the treatise it was said that on an average a certain rare disease attacked the human race at about 45 years of age, and in an appendix a record of the cases was given; they amounted to two—in one the disease removed an infant of six months, and in the other it terminated the career of a nonagenarian. The value of averages, wrongly used, is well illustrated by this joke, and Mr. STANLEY MORRISON pointed out that a significant meaning lay beneath it. There are 526 special schools in England and Wales providing education for the blind, the deaf, and the physically and mentally defective, of which London maintains 174. Mr. MORRISON urged that this splendid system of special schools, which ought to serve as a standard to which other centres should average up, might—the watchword being rigid economy—lose its efficiency by the average being taken downwards. In similar vein Dr. HADEN GUEST, speaking as a past medical inspector for the London County Council, indicated the impossibility of arriving at comparisons as between one area and another in respect of school population, a population which, he said, must be regarded medically from the point of view that the children are human beings and not from the point of view of the money expended. Dr. DRUMMOND SHIELS supported an amendment which by limiting the proposed measures of economy to new educational expenditure would leave unhampered existing progressive measures, and found an apt illustration in the practice of dentistry. He pointed out that dental trouble was being reduced to a very large extent owing to the activities of the dental centres, and that a wide movement, successfully inaugurated in London, was fast taking root in the provinces, a position which, he urged, ought not to be altered for the worse, even if it could not be promoted by larger support. The practical outcome of these and similar representations was nil as far as any alteration in the measure, but good must have been done by the warnings. Ill-health, and especially ill-health in the young, is a costly and wasteful affair to the community, and under the wide discretions which the Economy Bill will allow, it must be hoped that this will always be remembered by the authorities. It is far easier to closure health activities than it is to set them going—levelling-down is simple and levelling-up is hard.

CEREBRAL TUMOURS.

THE second scientific sitting of the International Congress of Surgery, held a few days ago at Rome, was given up to the consideration of cerebral tumours, and was remarkable for the great variety of opinions expressed as to the best methods of treatment and the results which might be expected. The wide differences in technique of the different surgeons who shared in the discussion showed what an immense amount of attention has in recent years been paid to this difficult branch of surgery, and it suggested that, in spite of all the advances which have been made, the perfect technique for opening the skull has yet to be discovered. On certain points there was universal agreement such as:—the importance of early diagnosis and of operation before the symptoms of general pressure have appeared; the necessity for perfect hæmostasis in the early stages of each operation, and for conserving the patient's resources to meet the formidable demands made upon him when pressure is released; and close collaboration between the surgeon and the neurologist at every stage both of diagnosis and of treatment.

In opening the discussion Mr. HANS BRUN (Lucerne) described in great detail his technique for craniotomy, founding his observations on his own series of 458 cases. Operating entirely with local anæsthesia he takes the most extreme precautions to prevent the slightest loss of blood, making his incision in very short sections and ligaturing every artery as it appears. After drilling a preliminary hole with a burr, he divides the bone exclusively with Krause forceps, packing each section of the groove with gauze impregnated with a solution of gelatin. Where he operates in two stages he does not raise the osseous flap at the first stage, but contents himself with a mere division of the bone around the free margin of his flap. On raising the flap at the second operation he thus has the advantage of exposing a dura mater which has not been disturbed. Dr. DE MARTEL (Paris) adopts an entirely different technique (in his absence his paper was circulated at the Congress), although he also operates under local anæsthesia. After incising the scalp with every precaution to avoid loss of blood he divides the bone by mechanical means, using a powerful engine of his own device, fitted either with a special burr or with a circular saw. By these means

the dura mater is reached with rapidity and apparently without discomfort to the patient. He lays stress on opening the dura only after reducing cerebral tension by ventricular puncture, hypotonic intravenous injections, or rectal injection of magnesium sulphate. Mr. PERCY SARGENT (London) (also unable to be at the Congress) presented a paper of great interest founded upon his own series of 336 operations for cerebral tumour. He laid great stress upon a knowledge of the exact situation of a tumour, its pathological nature, and the degree of intracranial pressure to which it had already given rise. He pointed out how mistaken was the idea that the trinity of headache, vomiting, and optic neuritis was the true index of cerebral tumour, regarding these rather as indications of impending death, and he urged the importance of learning to appreciate early symptoms, and especially the first signs of papillœdema. It was possible, he thought, to diagnose the situation of a tumour correctly in 90 per cent. of cases by clinical means alone, and he deprecated the necessity for such methods as ventriculography. A consideration of the history of the case and of the ascertained situation of the tumour often made it possible to form a shrewd idea of its histological nature. Thus cerebello-pontine tumours are mostly neuro-fibromata, pituitary tumours are adenomata, and cerebellar tumours are gliomata. Tumours of the cerebrum are almost invariably gliomata or endotheliomata, and even in the frontal and post-central regions where endotheliomata are most common, the gliomata out-number them by two to one. Mr. SARGENT'S statistics repay study. In summing up his experience of cerebral glioma, he stated that about 25 per cent. of the patients die shortly after operation, about 50 per cent. within eight months, leaving 25 per cent. to make a good recovery, many of them being able for several years to live useful lives and earn their own living. The outlook is more favourable than this with cerebellar glioma, for symptoms tend to arise at an earlier stage, the tumours show a remarkable tendency to cystic degeneration, and lost cerebellar function is readily compensated. As compared with glioma of the cerebrum the operative mortality is less than half, the proportion of good recovery is higher, and the average survival nearly twice as long. Oddly enough the operative mortality of endothelioma exceeds that of glioma, presumably owing to the radical nature of the procedure, but Mr. SARGENT can point to 46 per cent. of good recoveries after removal.

Later in the sitting Prof. ARCHIBALD YOUNG (Glasgow) contributed some interesting statistics and described a novel procedure for supporting the bulging brain after extensive trephining for decompression. Prof. ADSON, of the Mayo Clinic, gave a fine cinematograph demonstration of trigeminal neuralgia and its treatment. The discussion concluded with a debate on different methods of opening the skull. Mr. A. R. JENTZER (Geneva) showed an ingenious trephine by means of which a disc of bone, two and a half inches in diameter, can be rapidly removed without the slightest risk of injury to the dura; and Mr. H. S. SOUTTAR (London) showed a new form of craniotome in which a cutter, fitted to a powerful lever, turns round an axis which has first been fixed to the skull itself, so that large osteoplastic flaps can be fashioned with ease and rapidity. The sitting suffered, as all such international occasions must suffer, from the volume of material presented and the limited opportunity available for discussion. All who are interested in cerebral surgery should read the papers as they appear at length in the printed proceedings of the Congress.

THE TECHNIQUE OF PERORAL ENDOSCOPY.

DIRECT visual examination of the bronchi and œsophagus has its home in Jefferson College, Philadelphia, where the genius of a CHEVALIER JACKSON has brought its technique to a high level of exactitude. In his Lumleian lectures, delivered before the Royal College of Physicians of London two years ago, one of Prof. JACKSON'S colleagues, Prof. THOMAS MCCRAE, told the story of the bronchoscopic clinic associated with the University Hospital in Philadelphia as seen by the physician attached to it. In a series of 1300 cases of foreign body in the bronchus JACKSON, we learn, did not fail once to remove the body by means of the bronchoscope, usually within a few seconds. This exploit was brought home graphically to the medical profession in this country by Prof. MCCRAE'S illustrations of the varied foreign bodies removed in this way. These pictures, which were reproduced in our columns [1] at the time, showed dental plates and instruments of various kinds found impacted in the air-tubes, numberless safety-pins removed from trachea and bronchi, tacks and staples retrieved from all parts of the bronchial tree, a variety of toys, of which the larger sorts had lodged in the œsophagus, and a wonderful collection of seeds and shells which had found a nidus in some part of the respiratory tract. The inhaled objects of vegetable origin had a certain local colour, for in 100 consecutive cases a pea-nut or a portion of one was found in 45, a grain of maize in 17, and a water-melon seed in 15. Prof. MCCRAE'S lectures dealt in detail with the signs and symptoms produced by foreign bodies so introduced, with the diagnosis which was often only made after radiological examination, and quite briefly with the treatment. We are now able to publish a description from Prof. JACKSON'S pen (see p. 924) of the technique used at the bronchoscopic clinic.

One of the outstanding features of this clinic is the team of perfectly trained assistants of which, as Prof. JACKSON says, "every member is drilled for months in the steps" of the routine of endoscopic procedure; as a result, in easy and in difficult cases alike, the necessary manipulations are performed as though by clockwork. Doubtless the number of cases dealt with at the clinic, and the consequent opportunities for practice, are far greater than fall to the lot of any institution in this country. This is partly due to geographical conditions, partly to the pea-nut habit—and it may be noted in this connexion that the majority of foreign-body cases occur in babies—but largely, no doubt, to the reputation which Prof. JACKSON and his clinic have acquired. Where the opportunities are less, such a high degree of perfection is unattainable; and it is difficult to see how an approach to this perfection can be made in a London hospital, with its frequent changes of house surgeons and clinical assistants. Nevertheless, a careful study of Prof. JACKSON'S methods must be of great value to any endoscopist, particularly in the matter of the "Boyce position" for the patient, and of the duties and attitude of the first assistant. A further point of great interest is the question of anæsthesia; at the Philadelphia clinic general anæsthesia is not used for any endoscopic procedure, the chief reason being that "it is dangerous in certain cases and needless in any case." Cocaine is used in adults for direct laryngoscopy and for broncho-

[1] THE LANCET, 1924, i., 737.

scopy, but not for œsophagoscopy, and not at all in children; morphia is usually given before a first bronchoscopy, and is sometimes combined with atropine or hyoscine. It is well known that the œsophagus is almost insensitive; the bronchial tree is now shown to be less sensitive than has been supposed. and doubtless the endoscopist might dispense with anæsthesia more often in this country. But the temperament of patients is a very variable factor; in nervous cases, with throats rendered irritable by tobacco and alcohol, it is sometimes difficult to make an adequate examination even of the tonsils. We all know the spoilt, undisciplined, frightened child of 7 or 8 years old, in whom the simplest examination is very troublesome; and it is hard to understand how such a child is persuaded to submit quietly to bronchoscopy without the use of any form of anæsthesia. The highly perfected team-work of the Philadelphia clinic doubtless makes for great dexterity, but the American, as a race, is not more phlegmatic than the Briton, and it is probable that the occasional bronchoscopist will still have to resort to general anæsthesia, at any rate, for his more nervous and irritable subjects.

THE ARCH OF THE FOOT.

ALTHOUGH the various forms of pes cavus and claw-foot are common enough in England and are in general adequately treated, not much has been written about them in this country. In some of the largest and best known works on orthopædic surgery in our language the subject is dismissed without much consideration of details, as though its importance were small or its cure easy by obvious methods. Yet this deformity often gives rise to grave disability and pain, and shows itself most obstinately defiant of many attempts at cure. In considering pes cavus, as to a lesser degree in considering flat-foot, we are met at the outset with the difficulty of defining the normal arch of the foot. At the two ends of the scale of severity it is easy enough to distinguish flat-foot and pes cavus respectively, but the further we go from the extremes the more difficult does definition become. Races of men and individuals differ very widely in the shape of their foot-soles; the aristocratic foot "under which a mouse could run" on the one hand, and the foot with an almost non-existent arch on the other, may both be perfectly good feet from a functional point of view, and give no trouble to their owners. Some years ago an attempt was made at a large New England hospital to forecast the future of the feet of some hundreds of nursing probationers. The result was disappointing, for the observers failed to find any constant relation between defects detected on entry and subsequent breakdowns in training in the wards of the hospital. In severe and advanced cases, where radical operations on the bones are justifiable, treatment may no doubt be simple if severe. But in the vast majority of cases in which such mutilating procedures cannot be justified, the cure is often uncertain and the treatment is nearly always tedious. Dr. Hackenbroch [1] describes and discusses the pathological anatomy of the different grades of deformity and their operative treatment, ranging from fasciotomy to tarsectomy, not omitting the various tendon-transfer operations which have found favour with some surgeons. In something like 30,000 words and with the help of 40 illustrations he has given us a very full account of the subject, and one which should be of practical use to all surgeons who may be in doubt as to the best means of treating this deformity, for in this monograph they may find recorded most, if not all, of the procedures that have been devised for its relief.

[1] Der Hohlfuss. Seine Entstehung und Behandlung. Von Dr. M. Hackenbroch, Privatdocent, Oberarzt der Orthopädischen Klinik, Köln. Mit 40 Abbildungen. Berlin: Julius Springer. 1926. Pp. 83. G.M.6.60

Annotations.

"Ne quid nimis."

THE MAUDSLEY HOSPITAL.

PSYCHIATRY, which among primitive peoples is the earliest and most important branch of medicine, is, in civilised countries, only just coming into its own. In the middle of the last century many great physicians recognised that the mind had its diseases, and gave themselves to its study; then came a sudden expansion of interest in pathology and a dark period during which men declined to believe in the reality of diseases for which they could find no physical cause. From this attack of "parallelism" the science of mental disease is just rallying. Although it has not yet reached the position it deserves, it has attracted some of the greatest minds in medicine, and is subduing the forces of pathology to its own ends. It was only to be expected that the swing of the pendulum would bring uppermost the opposite view, that all disease, physical and mental, is the result of mental disturbance; the schools of psychology have increased and multiplied, and signs are not wanting of a tendency to neglect the demonstrable facts of biology and to introduce into the study of mental disease an element of ingenious psychological speculation that, while affording great satisfaction to its exponents, is not likely to contribute much help to the clinician, who is, after all, the person who matters most. Against this danger the Maudsley Hospital is a valuable defence. Those who direct its policy are not only psychiatrists of experience and skill, but they have a deep respect for hard work and patient research in pathology, biology, and chemistry. The essence of their attitude is that mind and body are one, that one cannot become disordered without the other, and that the only way to a full understanding of the secrets of mental disease is the proof, step by step, of the accompanying physical changes. Everyone knows in what a chaos the science of psychiatry is to-day; each author has his own classification and his own explanation of its problems, and nearly everything is empirical. But clinical certainty can only be built on a basis of pathological proof, and the workers in the well-equipped modern laboratories of the Maudsley Hospital have every chance of building the foundations of a scientific psychiatry. Their work on metabolism, vaso-motor reactions, hydrogen-ion concentration, and many other subjects is well-known, and they are fortunate also in being connected with a hospital where the nurses are enthusiastic enough to give up their time and comfort to act as controls, and where the medical officers add to their heavy routine work by collaborating in or initiating research work.

It is regrettable that the issue of the report of the Maudsley Hospital, in common with many other official publications, is so tardy. The booklet just published only takes the history of the institution up to Jan. 31st, 1925, and the work reported is already out of date. It serves to remind us, however, that this important experiment of the London County Council is fulfilling the hopes of those who conceived it and achieving its objects of facilitating research and teaching in psychological medicine and providing treatment for voluntary patients suffering from mental disorders of all degrees of severity. During its second year 1304 patients were treated, an increase of 300 over the number in 1923. The preponderance of female applicants for admission was so unexpectedly large that the accommodation had to be rearranged, until finally 96 out of the 144 beds were allotted to women. The hospital's policy of admitting mild, severe, and psychophysical cases together has met with a good deal of criticism, but the results have justified the innovation. The Maudsley has ample facilities for treating cases of slight mental disturbance accompanying such physical conditions as exophthalmic goitre and chorea, for it has the advantage of the coöperation of the consulting staff of King's

College Hospital. Moreover, in the present empirical state of psychiatric science, it is of the first importance to study those mental conditions that have a well-defined pathological basis, if the pathology of those which are as yet little understood is ever to be made clear. To make the Maudsley a clinic for mild cases only would defeat its end of furthering the study of mental disease as a whole, and would deprive it of a unique and valuable characteristic. The work of the out-patient department has increased considerably since the beginning of 1924, and the now insufficient accommodation is to be extended. The medical superintendent feels that the future success of the department will depend on an adequate supply of experienced clinical assistants, who will see most of the cases and leave the senior medical officers free to see new patients and those whose disposal is still uncertain. For chronic cases out-patient treatment can be only palliative, but it is none the less valuable in enabling many to "carry on" who would collapse without the periodic encouragement of "therapeutic conversation" and a little bromide, and it is actually preferable for watching and stimulating neurotics, who might drift into an asylum to shirk their difficulties. The arrangements for treating in-patients are exemplary. It is possible to keep three-fifths of the acute cases in bed in the open air in all weather, and when two bridges are covered in this accommodation will be increased. Massage, remedial exercises, and electrotherapy are extensively used. A special "occupations officer" attends three afternoons a week to instruct patients in a large number of handicrafts, at which many display great skill. Practically all the patients who are up do some gardening, clerical work, or tasks in the wards. Singing and dancing classes, entertainments arranged by the patients themselves, parties and picnics keep the patients cheerful and happy. The consultant staff includes a general surgeon, an ophthalmic surgeon, a gynæcologist, a surgeon for diseases of the ear, nose, and throat, and a dental surgeon.

The steadily increasing waiting list and the results of the treatment are sufficient proof of the need for other hospitals such as this. Systematic investigation into after-histories is carried out three months after discharge and then annually, and these statistics will become valuable material later on. The medical superintendent remarks on the party held last January of about 100 ex-patients, and the almost incredible contrast between the health of the guests then and the memory of what it had been at their worst when they were patients. The most urgent need now is for an associated convalescent home where recovering cases can be treated less expensively under the same general supervision.

THE QUARTERLY REVIEW OF BIOLOGY.

THERE are, says Prof. Raymond Pearl in the preface to the first number of this new paper, about 25,000 reputable scientific journals in the world to-day, and the promoters of *Biological Abstracts* judge that they will deal with some 4000 journals devoted to their sections of natural knowledge. It sounds almost hopeless to expect that more than a fraction of these printed researches will ever be assimilated, brought into their proper relationships, and made adequate use of. It seems as if we need a group of students who will forswear the fun of exploration for laborious lives of reading, contemplation, and synthesis. Till Mr. Rockefeller endows the appropriate colleges we must get what help we can from such papers as *Physiological Reviews*, *Science Progress*, *Nature*, and the present specialised biological quarterly. Biology moves fast nowadays, and it is of real importance that medical men should have such means as can be provided for keeping themselves aware of what is being done; for medicine is a branch of biology, it has much to receive from general biology, and it has much to contribute from its own unique experience; man is studied on a far greater scale and in much more detail than any other animal. We welcome, therefore, this attempt to make some of the modern developments of biology available for the ordinary reader. It is edited by Prof. Raymond Pearl and R. W. Hegner, of Johns Hopkins University, the form is tolerably agreeable, and the difficulty of reading the long lines of a quarto page is obviated by printing in double columns. The articles in this number deal with the mammalian testis and scrotum, symbiosis among animals, especially termites, experimental morphogenesis of the nervous system, the influence of the length of daylight on the growth of plants, recent work on the amœba and adaptation; there are as well notices of recent biological books.

HERPETOMONIASIS.

STUDIES [1] carried out by Dr. Jaroslav J. Drbohlav in the Department of Comparative Pathology at the Harvard Medical School serve to clear further the ground for the consideration of the probable, and peculiar, rôle of *Phlebotomus* species in the transmission of human leishmaniasis. Wenyon, investigating Oriental sore in Bagdad in 1910, found a herpetomonad in a *Phlebotomus*, and recent work by others has, at least, gravely implicated this fly as the vector of kala-azar and Oriental sore. Laveran and Franchini (1913–20) reported the successful inoculation of certain insect and plant flagellates into laboratory animals. They concluded that a relationship existed between the herpetomonads of insects and leishmaniasis. Fantham and Porter (1914–15) from their own experiments went further in claiming that leishmaniasis is herpetomoniasis of almost general insect origin, and especially that canine kala-azar is herpetomoniasis due to *Herpetomonas ctenocephali*, a flagellate occurring in the dog-flea. This flea was claimed by Basile (1912) to be the specific host of *Leishmania infantum*. About 115 species of herpetomonads have been reported, 96 of them in insects and arachnids. If the conclusions of Fantham and Porter be accepted, then flagellates from various insects should produce infections in mammals similar to, if not identical with, the leishmaniasis that occurs spontaneously. A considerable number of other investigators experimenting with the same species of flagellates, injecting them in the same way into the same or other similar species of animals, obtained negative results. The results of Drbohlav's work are in entire agreement with these investigators—viz., Wenyon, Novy, Macneal, Torrey, Bruce, Chatton, Delanoe, Rodhain, Pons, V. d. Branden Bequaert, Nöller, Tyzzer, Walker, Patton, Sundara Rao, Glaser, and Becker.

Inoculation of *Herpetomonas ctenocephali* of the dog-flea, from both old and freshly isolated cultures, into warm- and cold-blooded animals was invariably unsuccessful in Dr. Drbohlav's hands. The parasites rapidly degenerated and diminished in number, few could be found after six hours, and none after 24 hours. Up to three hours the parasites could usually be recovered in culture. Crithidia from the water strider, *Gerris remigis*, inoculated into mice, rats, and frogs gave negative results. The inoculated flagellates disappeared in six hours. *Herpetomonas muscarum* from the gut of *Lucilia* genus, and from freshly isolated cultures, inoculated into mice, rats, and frogs, and the same monkey as that used for (unsuccessful) inoculation of flea flagellates, produced no infection. Several species of plants of genus *Euphorbia* and a species of *Asclepias* were all found free from flagellates. In hanging-drop preparations from these Euphorbiaceæ inoculated with *Herpetomonas ctenocephali*, *H. muscarum*, *Leishmania infantum*, and *Trypanosoma rotatorium* motile forms were present after five days; but there was no multiplication and all forms degenerated and were dead after six days. The Euphorbiæ were inoculated with different cultures of herpetomonad flagellates, but no forms were found in the latex. In no animal

[1] Studies on the Relation of Insect Herpetomonad and Crithidial Flagellates to Leishmaniasis, Amer. Jour. of Hygiene, vol. v., No. 5, September, 1925.

or plant inoculated was there any sign of multiplication of the above flagellates; in fact these decreased in number and vanished after a few hours. The positive results reported by others may be explained by a confusion of natural infections with the inoculated, especially since proof such as might be obtained by the isolation in culture of the flagellate inoculated is lacking. Drbohlav's experiments indicate no ætiological relationship between *H. ctenocephali*, *H. muscarum*, *Crithidia gerridis*, and leishmaniasis, thus confirming the results obtained by American and most European investigators.

Whether a single herpetomonad species may be widely distributed among different species and genera of insect hosts is another question which Dr. Drbohlav set himself to answer, using for this purpose pure cultures and the method of cross infection. His experiments show that fleas may be artificially infected with their natural parasite, *H. ctenocephali*, but not with *L. infantum* (thus disproving Basile's contention), *H. muscarum*, or *C. gerridis*. Larvæ of *Ctenocephalus canis* were artificially infected by feeding them with fæces of infected fleas and with cultures of *H. ctenocephali*. Since such infected larvæ remained infected throughout the larval, pupal, and adult stages, it is probable that the natural infection of fleas is acquired in the larval stage by feeding on infected fæces of adult fleas, and not in the adult stage when only animal blood is taken as food. Attempts to infect flagellate-free *Gerris remigis* with *H. ctenocephali*, *L. infantum*, and *C. gerridis* failed. Cross infection experiments with cultures of *H. muscarum* on certain species of the genera *Musca*, *Fannia*, and *Lucilia* gave positive results, all of these species serving as suitable hosts. The flagellates described as different species from these various flies represent therefore one and the same organism, *Herpetomonas muscarum*.

IRON THERAPY IN INFANTS.

THE efficacy of iron in the treatment of infants has been the subject of frequent dispute, and reference to the literature reveals considerable conflict of opinion, apparent or real. American authors have in recent years been almost unanimous in regarding iron as useless in the treatment of infantile anæmias. The basis of this opinion has in most cases been the result yielded by animal experiment. Dr. Murray Bass and Dr. Bernard Denzer[1] have approached the question from a standpoint which required an ætiological classification of the anæmias before passing judgment on the value of iron. Adopting the continental classification into constitutional, alimentary, and infective anæmias, they draw attention to the different way in which these forms respond to the ingestion of iron, and admit that the third type is not improved by it. The constitutional anæmias include those found in premature infants and twins, and are due to a deficiency of the "iron depôt" posited by Bunge. The alimentary anæmias result from unduly prolonged feeding on milk alone, and consequent exhaustion of the iron depôt. Both these types were found to benefit immediately and unequivocally from the administration of inorganic iron. Some interesting and very convincing case-histories are given as illustrations of the improvement obtained, particularly those of two twins of 1 year who were suffering from severe anæmia of chlorotic type with practically identical blood-pictures. One of them was treated with iron and the other used as a control, their diets being identical. The hæmoglobin percentage of the first rose steadily from 30 to 60 per cent. in six weeks; that of the control remained stationary until transfusion was performed as a necessary life-saving measure. Doubt has been expressed as to the infant's power of absorbing inorganic iron. Experiments referred to in this paper suggest that the administration of iron to a child who is fed exclusively on milk does not bring about an increase of hæmoglobin, but that it will do so if vegetable extract is added to the diet; the fault is not in the absorption of the iron, but in the synthesis of the hæmatin portion of the hæmoglobin.

The views which we have quoted are held by many observers in Europe, especially in France. To a certain extent the conflict of opinion between them and the majority of American authors is more apparent than real. The statement that the great majority of anæmic infants do not benefit by iron is true, because the great majority of them belong to the class in which the anæmia is a symptom or sequela of some infection. In this country there is probably no pediatrist who will decry the use of iron in a primary anæmia of the chlorotic type, but there is a notable divergence of opinion on the frequency of their incidence. It is likely that the comparative infrequency of prolonged breast-feeding in this country may affect the question. There can be little doubt that suitable solutions of inorganic iron are absorbed by the infant's intestinal tract, but it is a common experience that they set up an irritation of that tract, with resulting dyspepsia and anorexia That this is due to the absorption and not to the excretion of the metal is rendered likely by the fact that these symptoms usually disappear when oral administration is replaced by intramuscular injection. Some excellent preparations intended for the latter method are obtainable, and have added considerably to the applicability of iron therapy.

[1] Jour. Amer. Med. Assoc., March 27th, 1926.

THE ATTACHMENT OF THE EXTRA LIMB.

Samuel Butler rightly pointed out that a spade, a typewriter, and a locomotive could be regarded as detachable and artificial limbs. As such they come within the province of medicine, for an inefficient joint or contact between an operator and his machine may affect his health and his efficiency just as much as a diseased articulation between two bones. The efficiency or otherwise of industrial methods may not be the direct concern of medicine, but it is its concern to diminish the damage done by asymmetrical and dysharmonious effort. Physiology is the study of the mechanism of the normal vital processes and the way in which they react to environmental change, and it offers information on the conditions under which work can be done efficiently. It is very desirable that this information shall reach those who have to preserve and increase the health of the public, and that it should be applied in industry. We welcome, therefore, the announcement of a course of lectures, by Prof. R. J. S. McDowall, designed to meet the needs of candidates for the D.P.H., on Physiology as Applied to Hygiene, which was recently announced as beginning on May 7th (vide THE LANCET, April 17th, p. 837). The Industrial Fatigue Research Board and the related scientific committees of the Medical Research Council continue to produce a steady flow of really useful information on the attainment of efficiency. The results already obtained on the comparative physiological cost of muscular work carried out at different speeds and of variations in the position of the load carried, on the influence of rest pauses, and of changes of posture on the capacity for muscular work, and on the extent and effects of variety in repetitive work, are the groundwork of industrial physiology—the groundwork of an immensely important science. It ought to be familiar to hygienists, and it ought to be continued. Only last week an interesting publication was issued by the Board describing an investigation by two engineers, Mr. L. A. Legros and Mr. H. C. Weston, into the Design of Machinery in Relation to the Operator.[1] As an introduction to the report they describe the evolution of the bicycle from a hobby-horse of 1818 to the relatively efficient machine of to-day. In 1840 McMillan fitted a crank-drive to the two-wheeled frame—he combined machine and rider in one mechanism. But the bone-shaker, in use in the 'sixties, necessitated a cramped

[1] H.M. Stationery Office. Pp. 34. 1s. 3d.

position for the body and caused suffering to the rider by vibration and jolting on its solid metal tyres, and gradually it had to be modified and improved. At first the modification was mechanical, so as to obtain high efficiency; then it was psychological, so as to reduce the risk of falling and difficulty of balance; and finally it was physiological, so as to reduce vibration and enable the force exerted by the rider to be more efficiently applied. The bicycle, as they point out, has had the advantage of being tested in races, and its effect in producing fatigue has been severely tried. Industrial machines do not receive these direct tests, and it is not unusual for inefficient clumsy models to be reproduced (like inaccurate literary references) through many generations. The evolution of many varieties, moreover, has been impeded by too slavishly copying manual movement. This report does not, perhaps, specially concern medical men except in so far as it illustrates a principle; but the specific improvements which it suggests in various types of machine—notably of those in the laundry and leather-work trades—will be of such help to manufacturers that they will certainly ask for more.

GLAND-GRAFTING.

GRAFTING of glands is still on its trial. The experiments of Steinach, Voronoff, and others gave ground for hope that a new weapon against hitherto unconquerable diseases was to be placed in our hands. But grafting soon revealed itself as very uncertain. The proportion of grafts that take is not large, and the laws that govern a graft's chance of survival are still imperfectly understood. The vitality even of a slip that seems to have taken hold is open to dispute, and the slip itself always seems to disappear after a short time. No proof has indeed been offered that a graft ever acquires cellular activity of its own, or that its virtue is appreciably greater than so much glandular tissue introduced into the alimentary canal. This being so, the report of Dr. Frugoni and Dr. Scinone, of Florence,[1] on a case of chronic tetanus treated by a graft of human parathyroid into the tunica vaginalis, after the method described by Voronoff, is worth study. No one case can prove a theory or establish a method, but this success will encourage other investigators to take heart. Undoubtedly many experiments which have failed through a bad choice of site for the graft would, if repeated on the lines indicated, give more decisive results.

The patient was 21 years old, electrician by trade, a very heavy smoker. Family history good. At 16, after a heavy meal of plums, he had an attack of acute gastro-enteritis accompanied by a typical tetanic attack—"obstetrical" hands, painful rigidity of the arms with the forearm flexed and the upper arm pressed against the trunk, spasmodic rigidity of the lower limbs, abdominal contraction, difficulty in breathing, opisthotonos, diplopia, and lockjaw. This attack lasted three days; psychic and sensory function remained normal. After five months he had another and thereafter further attacks, at diminishing intervals, up to four in a single night. Between the attacks he sometimes lost consciousness and fell. His constitution was robust, but his general condition was not good; panniculus poor and mucosæ pale. Pulse and respiration regular and intelligence normal; but disposition impulsive and restless. He had a slight exophthalmos, a weak conjunctival reflex, and nystagmus on glancing sideways, with strabismus due to spasm of the internal rectus. Chvostek's sign was well marked; percussion of the facial muscles or of the sterno-mastoids, especially at their insertion, and of the abdominal muscles, would produce lively contraction. Trousseau's sign was actively present. The sign of Lasègue was absent, but if the extended leg were flexed on the pelvis severe cramp overtook all its muscles, especially those of the foot, which showed a hollow sole with the great toe in violent flexion. The attacks were sometimes accompanied by genuine epileptic seizures, with loss of consciousness. The effect of calcium chloride injections was transitory and the most intensive antisyphilitic remedies gave no result. The cause of the deficiency was probably a specific syphilitic lesion. An active gumma or arteritis would hardly have taken so long to produce the effects, nor would it have been so intractable to the ordinary remedies. The operation followed the technique of Voronoff. Under novocaine anæsthesia an incision 7 cm. long was made in the tunica vaginalis, the testicle withdrawn, and the graft fixed on its medial side in the cul-de-sac near the epididymis, fine catgut being used and drawn, not through the glandular tissue, but through the fringe of fat and connective tissue surrounding the gland.

When the operation was performed the patient was undergoing six or seven long and extremely painful attacks every day. The graft effected on June 11th had an almost instantaneous effect. On the next day but one following it took three minutes to provoke the Trousseau sign, which hitherto had appeared at once; two days later the leg would not cramp under flexure and Trousseau's sign had disappeared. It came back from June 16th to 25th, and then vanished for good. Chvostek's sign, although much less conspicuous, was still present up to the date of the report, showing that a slight parathyroid deficiency remained which the graft had not succeeded in compensating. Others have noted this persistence. Meanwhile the patient, released from his pain, picked up amazingly. Excitability tests, taken after 15 to 25 days, showed that while the state of the facial muscles was unaltered, the threshold for those of the arm was considerably raised. Most important of all, the ingrafted gland was felt on palpation firmly attached to the testicle, and at the end of five months it had lost nothing of its volume. Much of the interest of the case depends on how long the graft will survive, but it has served to prove the connexion between chronic tetany and parathyroid deficiency and to demonstrate the advantage of Voronoff's innovation. Even if the hopes of the authors are destroyed by the ultimate disappearance of this, as of most grafts, they have at any rate made a substantial contribution to the resources of gland therapy.

[1] Presse Médicale, March 20th, 1926.

A REVISED VIEW OF PANCREATIC SECRETION.

ACCORDING to Bayliss and Starling the hormone called secretin which stimulates the pancreas to activity is derived, by the action of acid, from a precursor called prosecretin and therefore exists only in that part of the small intestine where there is acid to promote the change. It is supposed that when the acid contents of the stomach pass into the duodenum they act at once upon the prosecretin present in the walls to form secretin; this is absorbed into the circulation and thus is carried to the pancreas. If this view is correct it is clear that the secretion of pancreatic juice depends to a large extent on the production of hydrochloric acid by the gastric mucosa; but an account of recent investigations of J. Mellanby and A. St. G. Huggett, published in the *Journal of Physiology* (1925, lx., 25), suggests that this explanation does not altogether fit the facts. These workers began by determining the distribution of prosecretin in the alimentary canal, making an extract from the mucous membrane with 0·2 per cent. hydrochloric acid as recommended by Bayliss and Starling. They discovered, however, that hydrochloric acid has no specific capacity for the preparation of secretin extracts from the alkaline mucosa and found that dilute alcohol is in fact much more effective for the purpose than acid. They claim, moreover, that their experiments prove the presence of considerable quantities of pre-formed secretin in the mucous membrane of the upper two-thirds of the small intestine; a relatively small quantity may also be extracted from the lowest third. The secretin contained in the mucous membrane is, they state, soluble in water and is relatively stable in dilute solution of acid or alkali, alcohol, and acetone. It may therefore be obtained by extracting the mucous membrane of the upper two-thirds of the small intestine with water, 0·2 per cent. NaOH, phosphate solutions (pH 7·5, 6·5), 0·2 per cent. hydrochloric acid, 75 per cent. alcohol or 75 per cent. acetone. There is no evidence, they consider, that gastric hydrochloric acid converts a precursor (prosecretin)

present in the duodenal mucous membrane into secretin and thus excites a flow of pancreatic juice, as was suggested by Bayliss and Starling. Secretin, they remark, possesses all the properties of a secondary albumose, being soluble in water, precipitated on full saturation with Am_2SO_4 and destroyed by pepsin, trypsin, and the intracellular enzymes of the small intestine. It is not derived from the alimentary digestion of protein, since it is present in considerable quantities in the small intestine of the fœtus. In conclusion, they find no evidence that the chemical group to which secretin owes its activity is of the nature of a primary amine.

THE FUNCTION OF AURAL CERUMEN.

THE function and purpose in nature of the cerumen secreted by the external auditory canal is a subject which has not attracted much attention from experts. In a recent issue of the *Journal of Laryngology and Otology* (April, 1926), Dr. E. ff. Creed and Mr. V. E. Negus contribute the results of some investigations they have made. Of 69 individuals examined, only five had no cerumen, and all of these had healthy ears. Neither age nor the width of the meatus had any definite effect on the amount, consistence, or colour of the wax; but the tendency was for the quantity to be smaller in the female sex. A bacteriological examination of the cerumen from 49 specimens was made, and in only two cases was there no growth; staphylococci, moulds, and diphtheroid bacilli were the most frequently found organisms. The writers come to the conclusion that cerumen is most decidedly not bactericidal; on the contrary, it serves as a medium in which organisms of great variety may multiply. They suggest that it has no important function in man, and that the only useful function it can serve is to prevent mechanically the entrance of such things as dust and insects to the deep meatus. There is, we think, another useful function. As well as making people deaf by occlusion of the meatus, and being a source of trouble, if also of emoluments, to doctors and aurists, is it not possible that it is of service in aiding the removal of shed epithelial débris from the auditory canal? The external auditory meatus is the only example in the body of a deep narrow cavity lined by ordinary skin, which is constantly shedding its outer layers. On the surface the shed flakes are removed imperceptibly, but in the meatus the cerumen forms a lubricant which adds bulk to the desquamation and assists its discharge. In the great majority of cases it performs this function admirably, and the wax comes away in frequent small quantities, which are almost unnoticed. But it is necessary that its consistence should be correct; if it is too stiff it collects and may in time occlude the meatus. Accumulations of shed epithelium in the meatus are not infrequent and are far more troublesome than collections of wax; they may be due, in part at least, to the absence of the secretion.

THE BOXER INDEMNITY AND PUBLIC HEALTH.

THE funds due under the Boxer Indemnity are to be allocated by the Powers to undertakings for the benefit of China. An earnest appeal to the British Government has been issued by two representative leaders of Chinese medicine, Dr. S. M. Howe and Dr. W. L. New, who suggest that a portion of the sum to be remitted by Great Britain shall be devoted to public health work. The Americans, they remark, have encouraged higher education amongst the Chinese; the French have used their funds partly for financial stabilisation and partly for education; the Dutch have begun a conservancy scheme on the Yellow River; the Japanese intend to spend the money on an Oriental library and research laboratory. As yet the British Government has come to no decision, though a Commission has been appointed. What could be more appropriate, it is suggested, than that Britain should give to China "that part of its culture in which it leads the world"? Modern industrialism and rapid transport took their origin in England. The sanitary evils which they brought in their train first appeared in this country, and naturally the British became the pioneers of health legislation. This position they have maintained, but unfortunately, in other lands, the antidote is slow in following the poison. In China industry and communications are making headway, and there has, of course, always been a crying need for hygiene and sanitation. We publish on page 946 some account of the present situation, and it is satisfactory to note the rising standard of medical education. But public health work in China is still hardly more than sporadic, and the tasks to be faced are stupendous. Dr. Howe and Dr. New, who speak for the two principal medical organisations of China, suggest that as an initial step a Public Health Commission should be set up. According to their proposal this would involve the use of £100,000 per annum, which is less than a quarter of the sum to be remitted by the British Government. The function of the Commission would be to encourage the attempts of provincial and local city governments to inaugurate health measures, and to give them technical direction. In the past little result has followed municipal schemes because the officials have had a wrong outlook on public health and because there has been a lack of funds and coördination of the existing facilities. Certainly even a relatively small sum, judiciously expended, has been known to act as catalyst in a large public health movement. A Commission could secure the local appropriation of funds by offering partial support over an initial period of years and could lend out medical personnel while local officials were being trained abroad. On these lines, it is clear, much good might be done. "We are confident," says the appeal, "that no other expenditure on such a small scale could be made to affect within a decade the welfare of as many persons as the plan proposed." Plague, cholera, small-pox, and typhus cause appalling havoc in China, and their control can only be hoped for if schemes of preventive medicine are begun.

Mr. Guy Capper Birt, M.R.C.S., L.R.C.P. Lond., L.D.S., has been appointed surgeon-dentist to His Majesty the King, in the room of Sir Harry Baldwin, C.V.O., who has been appointed honorary surgeon-dentist to His Majesty.

BY an Order of the Committee of Privy Council, Lieut.-General Sir William B. Leishman, Director General, Army Medical Services, has been appointed a member of the Medical Research Council. The vacancy thus filled was consequent upon the recent approval of amendments to the Royal Charter of the Medical Research Council, which provide, inter alia, for an increase in the number of members from 10 to 11. Under the amended Charter, two of the eight scientific members will retire in each year, and one of the three other members in each second year, the scientific members being not eligible for reappointment before the end of one year after retirement.

WILLIAM NICHOLLS CONVALESCENT HOME. — A convalescent home in connexion with Cardiff Royal Infirmary was opened on April 24th by Lady Nicholls, the wife of the donor. The house, formerly known as Ty-to-Maen, was built by the late Mr. Richard Allen, and his nephew, Sir William Edgar Nicholls, has presented it to the infirmary as a memorial to his uncle. Thirty-five convalescent patients are already installed in the home, which has beautiful grounds. It is situated at St. Mellons, about midway between Cardiff and Newport. Lady Nicholls has presented a wireless installation for the use of the patients in the home. Among the speakers at the opening ceremony, which was largely attended, was Sir Ewen Maclean. He drew attention to the urgent need for more hospital beds in Wales, where there were only two general hospital beds to every 1000 of the population.

Modern Technique in Treatment.

A Series of Special Articles, contributed by invitation, on the Treatment of Medical and Surgical Conditions.

CLXXI.—THE TREATMENT OF DIABETES.

I. DIETETIC TREATMENT.*

THE aim of treatment of a patient with diabetes mellitus, whether dietetic measures alone are used or whether insulin therapy is added, is to contrive that the blood-sugar before breakfast is within the normal limits of 0·08 to 0·13 per cent.; that it does not exceed 0·18 per cent. at any time of the day, and is not raised above 0·15 per cent. for more than two hours after a meal. The proportion of carbohydrate, protein, and fat should be such that either no acetone bodies or only minimal amounts appear in the urine. The caloric value of the diet should be sufficient to enable the patient to maintain his weight, lead his ordinary life, and, if a child, to grow and develop properly. The urine which is passed after the evening meal should be tested for sugar. Benedict's qualitative solution should be used in preference to Fehling's solution as it is easier for the patient to learn. The general health of the patient must be cared for and minor complications, such as constipation and any form of focal sepsis, must receive the appropriate treatment.

Dietetic Measures.

The normal diet may be altered in either of two ways: (1) by a reduction in its caloric value to about one half the normal amount and a careful balancing of the carbohydrate and fat to prevent ketosis—the so-called maintenance diet; (2) by ordering a short fast, to be followed by a rapid increase in the diet to the same level as the maintenance diet—the ladder diet. Both methods have their adherents and merit discussion.

The Maintenance Diet.

The maintenance diet was introduced in America as a reaction from prolonged fasts and severe under-nutrition and partly to prevent any ketosis. It is useful in dealing with patients who have already been under treatment for diabetes. In the hands of physicians specially experienced in the management of diabetic patients it gives excellent results even in new cases, though for the reasons set out below I personally prefer the ladder diet for these.

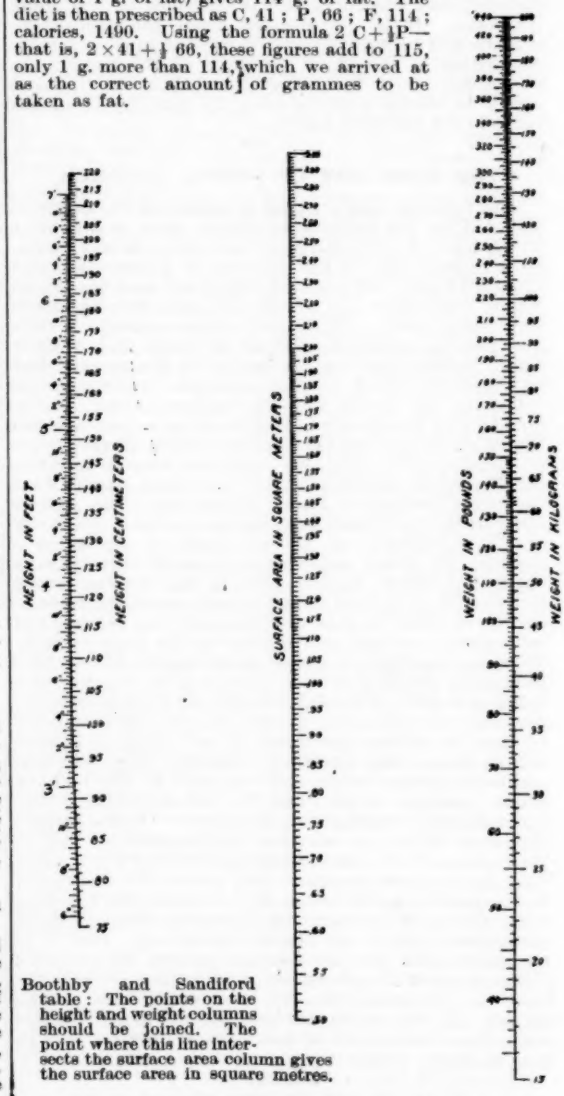
In order to construct the maintenance diet certain calculations are necessary.

The patient's body-weight and height are ascertained, and using the Boothby and Sandiford table (see figure) the surface of the body in square metres is read off. Example: Height, 63 in.; weight, 132 lb.; surface area, 1·62 sq. metres. If the patient is a male aged 40, the calories required for the metabolism, while at rest in bed, are read off from the Aub-Du Bois table. In this case it is 924 per sq. metre, or 1497 per 1·62 sq. metre. This amounts to 11·3 cals. per pound. If this calculation is impossible an approximate result can be obtained by multiplying the patient's weight—132 lb.—by 11·3=1492. In our example the result is practically identical, and although this is not always the case the error will never be very great.

In order that the diet may be correctly balanced it must fulfil the following conditions. The number of grammes of fat must equal the sum of twice the number of grammes of carbohydrate and half the number of grammes of protein. This is best expressed as an equation. $F = 2C + \frac{1}{2}P$.

The caloric value to be given—in this case 1490—is then divided between the carbohydrate, protein, and fat in the following way.

For an adult ½ g. of protein is allowed per 1 lb. of body-weight; in this case the allowance amounts to 66 g. This figure multiplied by 4·1 (caloric value of protein) gives 270 calories from the protein and leaves 1220 for division between the carbohydrate and fat. In order to prevent any ketosis the balance between these two must be carefully struck. If the caloric value (1220) still available is divided by the arbitrary figure 30 the quotient is the amount of carbohydrate to be consumed per day in grammes—in this case 41. This figure multiplied by 4·1 (caloric value of 1 g. carbohydrate) gives 168 calories. 1220 minus 168 leaves 1052 calories for the fat, and this number divided by 9·3 (the caloric value of 1 g. of fat) gives 114 g. of fat. The diet is then prescribed as C, 41; P, 66; F, 114; calories, 1490. Using the formula $2C + \frac{1}{2}P$—that is, $2 \times 41 + \frac{1}{2}$ 66, these figures add to 115, only 1 g. more than 114, which we arrived at as the correct amount of grammes to be taken as fat.



Boothby and Sandiford table: The points on the height and weight columns should be joined. The point where this line intersects the surface area column gives the surface area in square metres.

AUB-DU BOIS TABLE.—*Caloric Requirement per Square Metre of Body Surface.*

Age (years).	Cal. per day.		Age (years).	Cal. per day.	
	M.	F.		M.	F.
10–12	1236	1200	20–30	948	888
12–14	1200	1116	30–40	948	876
14–16	1104	1032	40–50	924	864
16–18	1032	960	50–60	900	840
18–20	984	912	60–70	876	816

M. = males. F. = females.

Calculate requirement in children according to weight. Up to—

22 lb. .. .. 27·5 cal. per lb.
22–33 lb. .. .. 25·0 ,,
33–44 lb. .. .. 25·0 ,,

The total amount of calories to be consumed in the day—in our hypothetical case, 1490—is divided into four meals

* Part II., on the Insulin Treatment of Diabetes, will appear in THE LANCET next week.

of approximately the following amounts: Breakfast: C, 13·5; P, 22; F, 38; calories, 499. Midday: C, 9; P, 15; F, 25; calories, 330. Tea: C, 5; P, 7·5; F, 12; calories, 163. Evening: C, 13·5; P, 22; F, 38; calories, 499.

How to Use this Diet.

In order to use this diet reference must be made to diet tables such as those of Poulton[1] and Harrison and Lawrence,[2] for it is essential to give variety. Some patients learn to calculate their diet very accurately with these tables, but the majority need another method. A simpler way has been devised by R. D. Lawrence,[3] who has calculated the amounts of protein and fat in the following dishes and made these approximately equivalent to each other by adding different amounts of fat.

The following articles of food contain approximately 7·5 g. protein and 15 g. fat: Bacon, 1 oz. Ham, tongue, or sardines, 1 oz., with ¼ oz. fat. Cheese, ¾ oz., with ¼ oz. fat. One egg or salmon, 1 oz., with ⅛ oz. fat. Lean beef, mutton, lamb, veal, pork, chicken, or liver, 1 oz., with ¼ oz. fat. Pheasant, grouse, partridge, or rabbit, ¾ oz., with ¼ oz. fat. White fish, crab, lobster, 1¼ oz., with ⅛ oz. fat.

In order to know how many of these rations should be eaten in the day the amount of protein to be consumed is divided by 7·5. In the case we have been considering, where the patient was allowed 66 g. of protein, he would get approximately nine rations. Of these, three rations are eaten at breakfast, two at midday, one at tea, and three at the evening meal. The total fat in these nine rations is 135 g., or 20 g. more than is allowed in our example. In order to correct this four-fifths of an ounce of fat must be deducted from the fat ration.

The carbohydrate ration is worked out separately because the daily carbohydrate ration allowed for in the maintenance diet should, in my opinion at least, only be reached by stages. At the outset of treatment, when the patient is still passing sugar, only 20 g. of carbohydrate are given.

5 g. of carbohydrate are contained in approx. 5 oz. of the following vegetables: asparagus, broccoli, cauliflower, brussels sprouts, celery, cucumber, endive, French beans, leeks, lettuce, vegetable marrow, rhubarb, spinach, tomato, sea kale, turnips, Jerusalem artichoke.

5 g. of carbohydrate are contained in: apple, 1 oz.; apricot, 1½ oz.; banana, ½ oz.; blackberries, 1½ oz.; black currants, 1½ oz.; cherries, 2½ oz.; damsons, 2½ oz.; gooseberries, 2½ oz.; greengage, 1½ oz.; grape, 1 oz.; grapefruit, 2 oz.; Brazil-nuts, 2½ oz.; hazel-nuts, 1½ oz.; walnuts, 1½ oz.; oranges, 1½ oz.; peaches, 3 oz.; pears, 1½ oz.; boiled peas, 1½ oz.; plums, 1½ oz.; raspberries, 1½ oz.; red currants, 1½ oz.; strawberries, 2½ oz. (Harrison and Lawrence.)

The carbohydrate is kept at this level (20 g.) until the urine is sugar-free and the blood-sugar normal. As soon as this occurs the carbohydrate is increased by 5 g. portions until 40 g. are reached, at which stage there should be no acetone bodies in the urine. If this is not the case the carbohydrate must be again increased. If, on the other hand, the urine does not become sugar-free on 20 g. of carbohydrate per day, insulin treatment is called for.

The Ladder Diet.

The ladder diet is in many ways simpler than the maintenance diet. Moreover, I prefer the principle of the preliminary short fast for the following reasons: (1) Symptoms are relieved at once, and in many cases the blood-sugar falls to normal in two or three days. (2) It has a valuable psychological effect; every addition to the diet is appreciated and a scale of half rations, such as the maintenance diet, which seems meagre except after a fast, is tolerated. A fast day is less tiresome than a half-ration day. (3) The fast day also has a use in that the patient starts the treatment with a period in bed and is more willing to treat his condition seriously. Three to four weeks should be devoted to the preliminary treatment so as to give the beta cells of the islands of Langerhans the best chance of recovery and to enable the patient to learn the details of the new diet and get accustomed to the change. It is suitable without variation for an adult of about 130 lb., but must be somewhat reduced for children and young adults.

On the fast day as much fluid as is desired may be taken—tea, coffee (with no milk or sugar), gravy soup or meat extract, fresh lemonade sweetened with saccharine.

Diet 2.—The fast is broken by a modification of the von Noorden egg and vegetable diet. Breakfast: two eggs, ½ oz. butter, 2 oz. of lettuce or tomato, tea or coffee. Midday: one egg, 6 oz. of green vegetables (5 per cent. group), ½ oz. butter, 10 oz. gravy soup. Tea: two eggs, ½ oz. butter, 2 oz. of salad, tea or coffee. Supper: 6 oz. of green vegetables, ½ oz. of butter, 10 oz. of gravy soup. One ounce of cream is taken in the tea and coffee. Carbohydrate, 17·5 g.; protein, 38·5; fat, 58·5; calories, 778. If the patient does not like eggs, an equivalent amount of meat or fish can be substituted, using diet tables.

Diet 3.—2 oz. of meat are added to the midday meal: C, 17·5; P, 52·8; F, 72·5; calories, 968.

Diet 4.—2 oz. of bacon are added for breakfast and the egg at midday is deducted: C, 17·5; P, 56·6; F, 97; calories, 1208.

Diet 5.—2 oz. of ham or other meat or equivalent of fish are added for the evening meal and one egg is deducted: C, 17·5; P, 59·2; F, 112; calories, 1360.

Diet 6.—4 oz. of milk are added as desired: C, 24·5; P, 64·3; F, 117; calories, 1450.

Diet 7.—5 g. of carbohydrate in the form of fruit are added: C, 29·5; P, 64·3; F, 117; calories, 1470.

If the patient has responded well to the diet the blood-sugar will be normal and the urine will only contain a trace of acetone bodies. If not, then insulin will be required. This level of diet is nearly the same as the maintenance diet, but the carbohydrate allowance is a little lower. The carbohydrate can be cautiously increased each week until it reaches 40 g.

Total Amount of Food.

In both schemes the next step is to determine the total amount of food which the patient needs. Some patients need very little food and gain weight on very low diets; others require a very big increase in the diet before they gain weight. The test of whether the diet is adequate is the weighing machine, and the patient should be weighed each week. If the patient's weight is much below the normal for age and sex the diet must be increased each week by 50 or 100 calories. In order to keep the balance right the increase should be made in the proportion of 12 g. protein to 6 g. fat (½ P = F). If the patient exceeds the normal weight for the age and sex the diet must be decreased. While this is being settled the patient should be instructed how to vary the diet. The carbohydrate ration is best taken in the form of milk, vegetables, and fruit, since the most variety can be obtained in this way. Some patients crave so much for bread that it is necessary to allow some in the form of toast. The protein can be varied by using any kind of meat, fish, cheese, or eggs. Their composition must be worked out approximately from diet tables, but it is unnecessary to be too meticulous in considering whether the meat comes from the undercut or topside of beef. The margin of error in the cooking is so large that these differences need not be considered. The fat can be taken as butter or cream. The real deprivation comes from the lack of an appetising bread substitute to eat with meals. In proportion as the bread substitute contains less starch so it becomes less palatable. Many preparations which are supposed to be suitable for diabetics contain a considerable amount of starch, even up to 40 per cent. No diabetic food should be eaten whose percentage composition is not clearly stated. It is an advantage to have the amounts of C.P.F. set out in terms of 1 oz., as this permits the patient to make the substitutions for meat and eggs easily. The special diabetic foods should not be taken in addition to the diet unless the caloric value is being intentionally increased. Diabetic jellies, jams, and preserved fruits all contain glycerine which is burnt as sugar, and must be calculated as a part of the carbohydrate ration.

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Assistant Physician, St. Bartholomew's Hospital.

[1] Diet Tables: E. P. Poulton. J. and A. Churchill.
[2] Food Tables: G. A. Harrison and R. D. Lawrence. H. B. Skinner and Co.
[3] The Diabetic Life: R. D. Lawrence. J. and A. Churchill.

Special Articles.

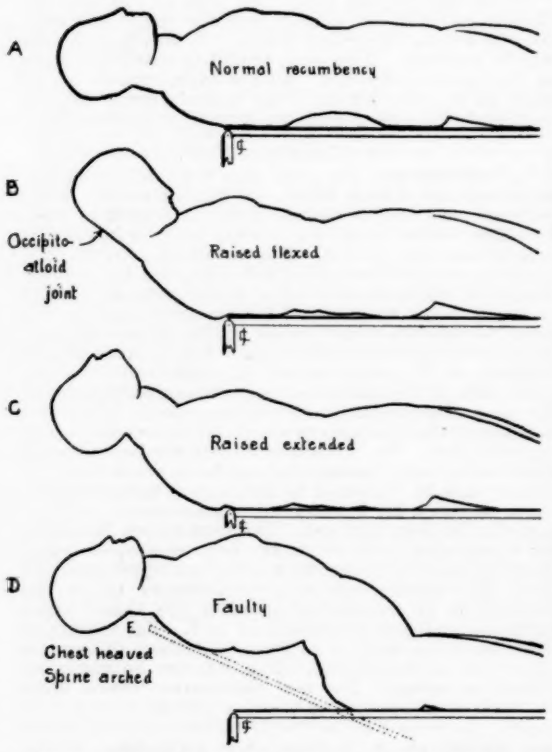
THE TECHNIQUE OF PERORAL ENDOSCOPY.

BY CHEVALIER JACKSON, M.D., SC.D.

(*From the Bronchoscopic Clinic, University Hospital, Philadelphia, Pa.*)

IN presenting here, in response to a request, a description of the technique used at the Bronchoscopic Clinics of Philadelphia, I have no thought of urging others to adopt any of the methods we use here. It seems necessary to state our reasons in connexion with some of the details; but these reasons, cogent to us, may not appeal to others. In this field, as elsewhere, every operator should decide all questions in relation to his patient as an equation in which the given terms are the operator, the available armamentarium, and all the various features of the particular case under consideration. The latter will include the age and condition of the patient, the presence or absence of secretions and secondary pathology, the mechanical problem, and especially the presence or absence of dyspnœa.

FIG. 1.



Schema of position for endoscopy. A. Normal recumbency on the table with pillow supporting the head. The larynx can be directly examined in this position, but a better position is obtainable. B. Head is raised to proper position with head flexed. Muscles of front of neck are relaxed and exposure of larynx thus rendered easier; but for most endoscopic work a certain amount of extension is desired. The elevation is the important thing. C. The neck being maintained in position B, the desired amount of extension of the head is obtained by a movement limited to the occipito-atloid articulation by the assistant's hand placed as shown by the dart (B). D. Faulty position. Unless prevented, almost all patients will heave up the chest and arch the lumbar spine so as to defeat the object and to render endoscopy difficult by bringing the chest up to the high-held head, thus assuming the same relation of the head to the chest as exists in the Rose position (a faulty one for endoscopy), as will be understood by assuming that the dotted line E represents the table. If the pelvis be not held down to the table the patient may even assume the opisthotonos position by supporting his weight on his heels on the table and his head on the assistant's hand. (From a drawing by the author.)

Drill.

We study all these factors but our procedure is always the same, and every member of the team is drilled for months in the steps. If the case is a difficult and dangerous one every member of the team is going through the same old routine and confusion is avoided. If the case is an easy one no harm has been done by our excess of preparedness. The object of drill in an army is not for purposes of parade. Its fundamental advantage is that when anything is to be done it will be done with promptness and precision. Without drill the army would be a mob. In endoscopic work, especially with babies, who constitute the majority of foreign body cases, serious emergency cases will come to the operator, and lack of the promptness and precision which only drill can give will surely increase the mortality-rate of the clinic. Fortunately, the widespread development of bronchoscopy and œsophagoscopy for the diagnosis and treatment of disease affords abundant opportunity for the drilling of an organisation on adult patients without risk, while at the same time these patients are receiving benefits that alone fully justify the procedures.

Anæsthesia.

We do not use general anæsthesia for any endoscopic procedure. The chief reason is that we think it is dangerous in certain cases, and needless in any case. Since we are accustomed as a routine to work without it, the work upon a patient in whom the use of general anæsthesia would probably be fatal is an everyday matter of the same old routine, involving no unusual procedure. Most of the deaths during endoscopy under general anæsthesia are due to mechanical obstruction of the airway, usually in a patient dyspnœic beforehand. It is accepted that the risks of general anæsthesia in the general run of surgical work are so slight as to be negligible. It is also accepted that safety in general anæsthesia depends upon an unobstructed airway, the maintenance of which is the anæsthetist's chief duty. In endoscopic work, laryngeal, tracheobronchial, or œsophageal, the airway to the lungs is often obstructed, either by the lesion, the foreign body, or the manipulations. The obstruction of the airway can reach a degree productive of deep cyanosis or even arrest of respiration without the slightest danger, if no general anæsthetic is being used, because the moment the airway is cleared respiratory movements return, or if they do not, intermittent pressure on the chest will promptly start them. Respiratory arrest in an anæsthetised patient is always a dangerous condition. More deaths on the table have occurred from general anæsthesia for œsophagoscopy than from that for bronchoscopy because of compression stenosis of the trachea caused by the crowding forward of the "party wall." Foreign bodies at the bifurcation may shut up both bronchi. Laryngeal foreign bodies and lesions cause extreme dyspnœa. The diagnosis of diphtheria of the larynx when no membrane exists in the fauces, in children too young for mirror examination, can be made only by direct laryngoscopy. It requires but a moment to take a diagnostic look at the larynx, and to get a swab specimen, in any child with croupy cough. We feel that the laryngologist should be able to look at the larynx of a croupy baby without anæsthesia, general or local, otherwise the practitioner will not avail himself of this diagnostic procedure. The unusual degree of bronchial expansion accompanying the deep inspiration that follows cough, when no anæsthetic is used, has been of the greatest aid to us, by opening up forceps spaces in cases of tightly fitting foreign bodies. The foregoing is not an effort to persuade anyone to work without anæsthesia. Everyone should do as he thinks best. It has seemed necessary for us to give our reasons for working as we do.

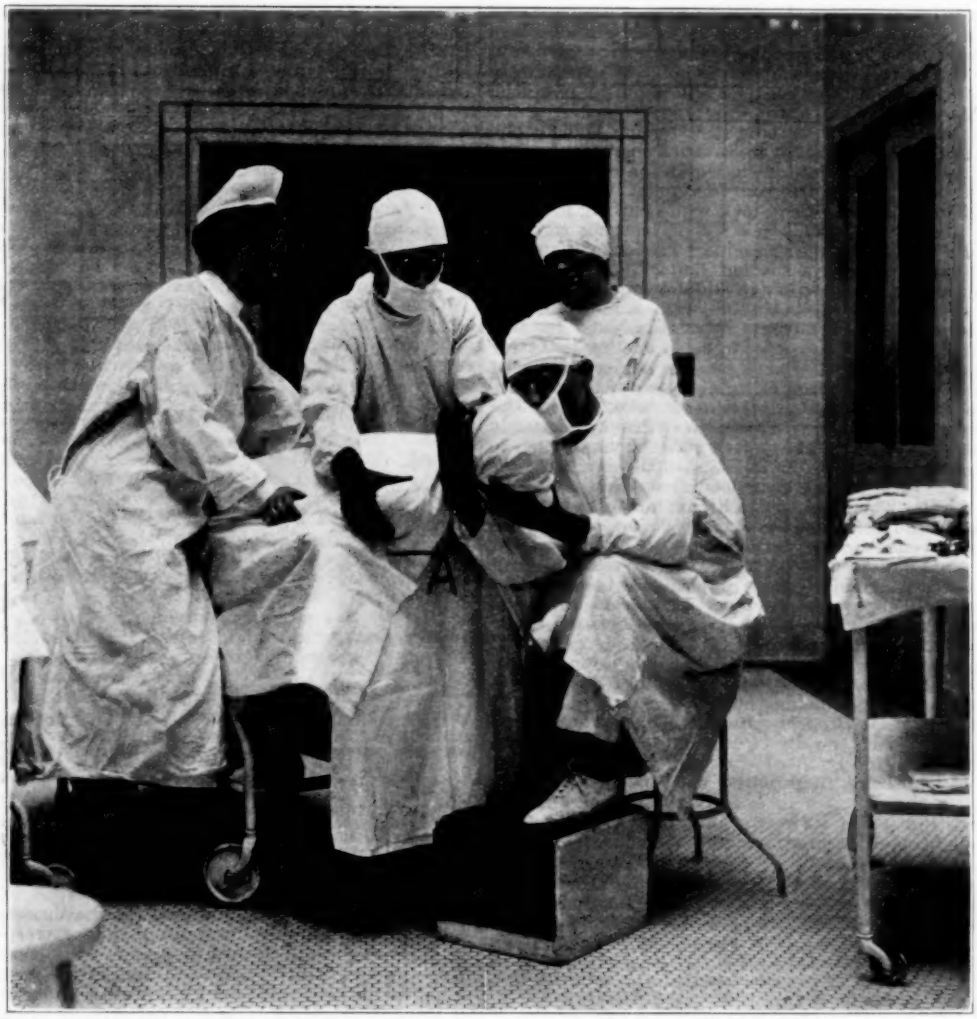
Our custom in regard to anæsthesia may be summarised as follows.

1. No anæsthetic, general or local, is used for œsophagoscopy in either adults or children.
2. No anæsthetic, general or local, is used for any endoscopic procedure in children.
3. In adults, for direct laryngoscopy and for bronchoscopy, the first few times, cocaine solution is applied to the pharyngeal mucosa in the region of the superior laryngeal nerves with two curved applicators used simultaneously. If bronchoscopy is to follow the direct laryngoscopy cocaine solution on a bronchial applicator, or from an atomiser, is sometimes applied through the larynx, but in most cases endobronchial application is deferred until the bronchoscope has been inserted, and it may then be omitted.
4. As a sedative, morphine, sometimes combined with hyoscine or atropine, is usually given for the first bronchoscopy to lessen apprehension and diminish reflexes. Sedatives are not ordinarily used for œsophagoscopy, though there is no objection to their use.
5. If repeated bronchoscopies are necessary, as in the bronchoscopic aspiration of pulmonary suppurations of other than foreign body origin, the sedative and the cocaine are diminished in dosage and are soon omitted altogether in most cases.

Position of the Patient.

We always put the patient in the recumbent position. The head is held high above the level of the table and the shoulders are held down on the table (Fig. 1). The trunk must be controlled to avoid the arching of the spine, as in opisthotonos. The knees are held down on the table. The foregoing refers to work in the larynx and to the starting of the tube downward in bronchoscopy and œsophagoscopy. As the tube goes downward the head is lowered as required by the operator in order for him to follow by sight the lumen of the trachea, bronchi, or œsophagus. Exposure of the orifice of the middle lobe bronchus requires a very low head; so does the passage through the lower third

FIG. 2.



Position of patient and assistants for introduction of the bronchoscope and œsophagoscope. The middle of the scapulæ rests on the edge of the table; the head and shoulders, free to move, are supported by the assistant, whose *right* arm passes under the neck; the *right* middle finger inserts the bite block into the *left* side of the mouth. The *left* hand, resting on the *left* knee, maintains the desired degree of elevation, extension, and lateral deflection required by the operator. The patient's vertex should be 10 cm. higher than the level (A) of the top of the table. It is essential for the assistant to have constantly in mind that the *right* forearm must not support the neck; all the support must be of the head only and must come from the *left* hand. This is the Boyce position, which has never been improved upon for bronchoscopy and œsophagoscopy; but for satisfactory results every detail must be precisely adhered to.

of the thoracic œsophagus and the abdominal œsophagus; so also does exploration of the stomach. In endoscopic work in the lower œsophagus and stomach relaxation of the diaphragm and abdominal muscles is favoured by flexion of the knees. For direct laryngoscopy the patient's head is held above the table. When the laryngoscopy is preliminary to the introduction of a bronchoscope the patient's head is held out in the air, toward the operator and above the level of the table, the head end of which is dropped (Fig. 3).

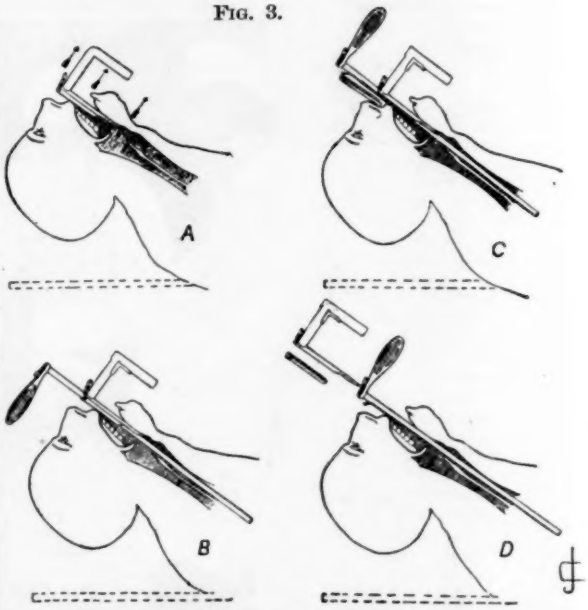
Direct Laryngoscopy.—Exposure of the larynx to direct inspection with the patient properly placed and held in the recumbent position is easily done on any patient whose mouth can be opened. Any deviation from the proper position may render it exceedingly difficult. We always use the *left* hand to hold the laryngoscope. This leaves the right hand free for handling laryngeal operating instruments and for the insertion of the bronchoscope without changing hands; and it calls for no greater degree of ambidexterity than the left-handed use of thumb-forceps in dissection, or the left-handed use of the fork while cutting meat on one's plate. It is all a matter of starting right in learning to use the instruments. The coördinate use of the laryngoscope in the left hand and the forceps in the right gives a facility in endolaryngeal operating that seems to us unobtainable with a mechanically held laryngoscope; but we may be biased. Be this as it may, there is no question as to the necessity for left-handed use of the laryngoscope if any degree of facility is to be acquired in bronchoscopy.

The laryngoscope is introduced back along the dorsum of the tongue and the tip of the epiglottis is exposed to view. The lip of the laryngoscope is inserted beyond the proximal edge of the epiglottis for a distance of not more than 1 cm. in a child or 2 cm. in an adult. Then a powerful lifting motion, sufficient to sustain the weight of the patient's head, is imparted to the laryngoscope in the direction of the dart shown at A, Fig. 3. At this point particular care to keep the patient's shoulders down on the table is necessary. Prying on the upper teeth as a fulcrum must be avoided. The patient not being anæsthetised, there will be no glottic chink until he takes a deep breath. If the patient is 3 years of age or over he is told to take a deep breath. If he is under that age he will soon do so without being told.

Insertion of the Bronchoscope.—Once the vocal cords are exposed with the direct laryngoscope held in the left hand the insertion of the bronchoscope is easy. The bronchoscope, illuminated with its own lamp, is passed to the operator in exactly the proper position for insertion (point forward, "handle" to the right). The operator, after inserting the bronchoscope in the laryngoscope, transfers his eye to the bronchoscope, and, making sure of the presentation of the vocal cords, insinuates the slanted end of the bronchoscope carefully between them. The exploration of the tracheobronchial tree is a matter of following the lumen, and is greatly facilitated by the position above described, which leaves the head of the patient free to be moved about widely in every direction.

Introduction of the Œsophagoscope calls for the exact position of the patient described above. With the œsophagoscope vertical the operator finds the right pyriform sinus by sight, no mandrin being used. Passing downward, the first obstacle is found at the bottom of the hypopharynx, in the rigid contraction of the cricopharyngeus muscle. It is necessary to wait for this to relax, but while waiting continuous *gentle* advancing pressure must be maintained and at the same time the œsophagoscope must be pressed anteriorward by the left thumb, to lift it away from the posterior weak point, where it otherwise is almost certain to perforate. This must be done without lowering the head of the patient. The "handle" of the œsophagoscope is not grasped in the hand. It must be up, by which we know the lip of the tube-mouth is anterior and away from the danger point. The general direction of the entire œsophagoscope is maintained by aiming for the median line as indicated by the midline of the sternum, notwithstanding the fact that we are starting from one side, in the right pyriform sinus. The opening of the lumen is watched for in the *anterior* part of the field. The relaxation of the cricopharyngeal pinchcock is usually accompanied by a regurgitation of saliva, and the slanted end of the tube-mouth glides over anterior to the relaxing cricopharyngeus muscle. Exploration of the thoracic œsophagus is simply a matter of following the lumen as it opens up ahead, a procedure easy of accomplishment when the head is held in the air, free to be moved in every direction, as indicated above. At the hiatus œsophageus the œsophagus goes through the diaphragmatic pinchcock. Just as the rubber tube of a curette is pinched tightly shut by the spring clip known as a pinchcock, just so we have the œsophagus pinched together at the hiatus by the crura and the muscular fibres of the diaphragm. The point in the lumen of the œsophagus corresponding to this pinchcock closure is found by lowering the patient's head to the right and aiming the œsophagoscope (or gastroscope) for the anterior superior spine of the left ilium. Gentle but continuous pressure on the proper place will be rewarded after a few moments of patient waiting by the relaxation of the pinchcock. The opening of the hiatal constriction is usually accompanied by a rush of gastric fluid, which will be clear if the stomach is "empty" and normal; otherwise it may be mixed with pus, blood, or food. Once the hiatus is passed the œsophagoscope slips so quickly and easily through the abdominal œsophagus that the existence of an abdominal œsophagus is not realised. There is no constriction of any kind, functional or structural, noticed at the cardia, only a faint difference in colour and a marked difference in the form of the folds.

FIG. 3.



Schema illustrating oral bronchoscopy. The portion of the table here shown under the head is, in actual work, dropped all the way down perpendicularly. It appears in these drawings as a dotted line to emphasise the fact that the head must be above the level of the table during introduction of the bronchoscope into the trachea. A, Exposure of larynx; B, bronchoscope introduced; C, slide removed; D, laryngoscope removed leaving bronchoscope alone in position. (The three figures are from Bronchoscopy and Œsophagoscopy. W. B. Saunders Co.)

Gastroscopy.—Exploration of the explorable area of the stomach is carried out in the collapsed state with the open tube œsophagoscope by traversing it upward and downward, moving the tube laterally to a new location at the end of each traverse, as with the

mechanical stage of the microscope. If desired a lens system may be inserted in the open tube and the stomach inflated for inspection. The greatest obstacle to reaching the pylorus, especially in adults, is the forward bulging of the spinal column. In children it is not very difficult to reach the pylorus; we have removed perorally a number of times foreign bodies jammed in it.

ROYAL MEDICAL BENEVOLENT FUND AND GUILD.

THE FUND.

THE annual meeting of this Fund was held on Tuesday, April 20th, when the Committee of Management, in presenting their report for the previous year, were able to show an increase of £1000 in new subscriptions and a larger distribution of moneys. Altogether 559 persons had been relieved, 392 by grants and 167 by annuities. The income derived from subscriptions and donations amounted to £6685, as against £4780 received in 1924, and that from invested property £4790, as against £4343 in 1924. The amount expended in grants was £5371, as against £5001 in 1924, and in annuities £3870, as against £3467 in 1924, making a total distribution of £9241. The total expenditure was £10,549, including working expenses, £1308, of which £80 was spent on furniture for the new office.

Legacies and Special Donations.

The following legacies were received: Dr. E. Riley, £250; Dr. E. A. Edelsten, £25; Sir Anderson Critchett, £100; Dr. M. G. Evans (in stocks) to the nominal value of £3325; Dr. W. H. Mason, £200; Dr. Bowen Hogg, £300; Miss E. J. Humby, £100; and Sir Rickman Godlee a contingent legacy of £5000. As the invested funds have now reached over £100,000, the legacies received during and after 1925 will be divided equally between the annuity and grant departments, the amount to be spent annually by the grant department not exceeding one half of the average of the legacies received in the previous five years.

Grateful acknowledgments were made in the report of a special donation of £1000 from Dr. W. Tinker; a grant of £525 from the Medical Insurance Agency; sums of £100 from Messrs. Wanders Ltd. and from Prof. T. K. Monro; of £50 from Mr. E. Hurry Fenwick, from Dr. and Mrs. Smyth of Bristol (towards the Christmas gifts), and from a subscriber as a donation, based on two guineas for every year he had practised. This donation was supplemented by a gift of £20 and accompanied by a letter stating: "I have a very guilty conscience for not having supported the most excellent Fund." The total amount received towards the Christmas Gift Appeal was £113 18*s.* 6*d.*

Grant Department.

The demands on this department, said the report, have increased, and an increased income has not been sufficient adequately to meet the urgent applications. Grants are divided into two categories, those of a temporary nature of £5 or under and those of £12 to £40 payable in monthly instalments, and the report regrets the want of money which prevents larger grants from being given. "The Committee feel," the words run, "if the distressing nature of the cases brought before them with the appalling state of poverty and frequently of starvation which investigation proves to exist were more widely recognised, a much more liberal response in the shape of subscriptions and donations would be forthcoming, and without this it will be impossible to continue assistance, even on the present basis.

Annuity Department.

The funded property now stands in the balance sheet at £103,887, the income realised was £4580, an increase of £237 over the figure for 1924, and £3850 was distributed to 167 annuitants in sums of from £10 to £40. During the year 11 annuitants died. The Committee elected 39 annuitants and in 17 instances the annuities were increased. The Fund is able to grant 20 annuities of £40; 19 of £30; 30 of £26; and 64 of about £20.

War Emergency Fund.

A full account of the origin and working of this Fund, together with the names of the Committee, was given in the report issued in 1923. During the past year £1778 4*s.* 2*d.* has been distributed, the greater part—viz., £1348—for the education of 29 children, and the remainder in grants to six medical officers. There remains a balance of £523 13*s.*, which has already been allocated.

Election of Officials.

Sir Thomas Barlow, Bt., was re-elected President. Sir Charters Symonds, K.B.E., Hon. Treasurer, and Dr. Newton Pitt and Mr. R. M. Handfield-Jones were re-elected Hon. Secretaries. Mr. George Bethell, who has been secretary for over 20 years, has retired in serious ill-health and has been granted a pension. Mr. Haines Carter was appointed in September last to succeed him.

THE GUILD.

The Guild gives help to the beneficiaries of the Fund by distributing comforts in the shape of special foods, clothes, and coals, and renders invaluable assistance in coöperating with the Fund in cases where there are children to be educated. The heavy demands which those in extreme poverty make on the Fund unfortunately prohibit the Committee from contributing more largely towards the educational work of the Guild.

Constant and close coöperation is maintained between the Fund and its Guild, whose increasing importance on the educational side is recognised. Those having opportunity of obtaining special terms at schools in the way of foundation scholarships or bursaries, or again, the means of obtaining training for young people of both sexes, are urged in the report to communicate with the secretary of the Guild, for while the parent Fund deals with the aged and the infirm, the vast importance remains of enabling the rising generation to become self-supporting.

The report closed with a tender of "thanks to the hon. auditors, Messrs. Deloitte, Plender, Griffiths and Co., and to the editors of THE LANCET and of the *British Medical Journal* for their readiness at all times to help the Fund, and for publishing monthly reports of the meetings."

RECENT GRANTS.

At the last meeting of the Committee of the Royal Medical Benevolent Fund 53 cases were considered and £548 was voted to 40 applicants. The following is a summary of some of the cases relieved:—

Widow, aged 47, of M.D. Aberd. who practised in London and died in 1924. Two sons, aged 18 and 14. Eldest is a cadet in Royal Air Force. Youngest at school; fees paid by Officers' Association. Applicant and younger boy have been living on proceeds of sale of practice. She is a medical woman and her chief difficulty arises from lack of work. A special grant of £14 was made by the Fund to meet outstanding rent.

Daughter, aged 56, of M.R.C.S. who practised in Surrey and died in 1889. Was in a home for several years. Latterly has been able to do light work, but had to leave her last employment through ill-health. An emergency grant of £1 was given to tide her over. She has now secured another post.

Daughter, aged 32, of M.D. Irel. who was in the Navy and died in 1897. All money invested in Germany was lost in the war. Applicant has supported herself and her invalid mother, but owing to recent ill-health has not been able to earn enough to keep them. Neither the applicant nor her mother is eligible for a naval pension as her father commuted his pensions and retired three years before he died. An emergency grant of £2 10*s.* was given. The applicant is a B.A. and is at present seeking some light post; her health is very indifferent.

Widow, aged 94, of M.R.C.S. who practised in Somerset and died in 1867. Up to the age of 75 supported herself by taking in lodgers. She has made her home with friends for the last 20 years, but now is so old and feeble that she requires constant attention. She has the Old Age Pension and £20 from the Leneup Charity, and we are asked to supplement this to enable her to have an attendant. Rent 10*s.* per week. Voted £40 in 12 monthly instalments.

Daughter, aged 66, of a surgeon who practised in the Midlands and died in 1875. Applicant and her sister, aged 61, have managed to maintain themselves since their father died, but owing to illness and ill-health are now without money for necessities. The applicant has managed to earn her living as a hosiery machinist until recently and now receives 9s. a week disablement benefit. Her sister at present is very ill and in hospital. Voted £12 in 12 monthly instalments. A grant for the sister will be considered later.

Daughter, aged 74, of M.R.C.S. who practised in Wiltshire and died in 1876. She had a school for 35 years and has had to sell it in order to refund money to the estate of her late partner. Nothing left after sale; she hopes to be able to live with a friend who has a small income of £80 per annum. Applicant has secured the Old Age Pension. Fund voted £30 in 12 monthly instalments.

Subscriptions may be sent to the Hon. Treasurer, Sir Charters Symonds, K.B.E., at 11, Chandos-street, Cavendish-square, London, W. 1.

MINERS' PHTHISIS IN SOUTH AFRICA: COMPENSATION CLAIMS.

THE Miners' Phthisis Medical Bureau, Johannesburg, have issued certain recommendations in regard to medical evidence in support of claims for benefits by miners or dependents of deceased miners.

Medical practitioners attendant upon miners who are believed to be seriously ill or dying from miners' phthisis, or from any other disease to which silicosis is believed to be predisposing or contributory, are urged in all cases to have the sputum examined for the presence of tubercle bacilli, if necessary more than once. The sputum should be expectorated by the patient in the presence of the medical attendant and should be examined at an institution where such examinations are made by experts. In South Africa the Government pathological laboratories at Cape Town and Durban and the South African Institute for Medical Research at Johannesburg carry out such examinations free of charge. A miner resident in the area of the Witwatersrand should be sent to the Miners' Phthisis Medical Bureau for examination during life. A complete clinical and bacteriological examination will thus be assured, and also a radiographic examination, if the patient is able to be subjected to the latter. The evidence obtained by either of these procedures may, in a number of cases, enable the Bureau to place the miner in the pensionable stage of miners' phthisis during life, and thus to secure his position and that of his dependents. A miner resident at a distance from the Witwatersrand, who has not been previously certified by the Bureau to have silicosis or tuberculosis, or who has not been proved to be expectorating tubercle bacilli, should obtain, wherever possible, a good instantaneous X ray negative of the chest, preferably on a film. This should be certified by the radiographer to be that of the miner in question.

In the event of death, in cases in which the above steps have not been adopted or have been adopted with inconclusive results, the Bureau suggest that a post-mortem examination should be made of the lungs of the deceased, in order that the exact condition of these organs should be determined. In all post-mortem examinations held within the Union of South Africa upon the body of a miner or ex-miner, if silicosis or tuberculosis is found in the lungs, the Miners' Phthisis Act of 1925 requires that such lungs shall be forwarded to the Medical Bureau for examination. When autopsies are held outside the Union of South Africa, the lungs, certified to be those of the deceased, should be forwarded for examination and report to an expert pathologist, preferably one who is attached to a public institution. A detailed report by the latter upon the appearances found in the lungs should thereafter be transmitted to the Medical Bureau.

A final paragraph urges the need of a post-mortem examination in all cases unless the presence of silicosis has already been certified by the Bureau, or has been definitely revealed by X ray examination during life, and in addition tubercle bacilli have been found in the sputum. An autopsy is frequently the only possible means of deciding whether a slight degree of silicosis, previously incapable of detection, is associated with a condition of tuberculosis. In the experience of the Bureau the result of a post-mortem examination has just as often confirmed an opinion, formed upon clinical grounds during life, as to the presence of silicosis, as the reverse, and the evidence which such an examination affords may thus be of decisive importance in respect of a claim by the dependents of a deceased miner.

IRELAND.

(FROM OUR OWN CORRESPONDENT.)

Municipal Administration of Dublin and Cork.

DURING the past few years the control of the local authorities has been suspended in no less than 17 areas in the Irish Free State, and in these areas commissioners are exercising the normal functions of the local authorities. The most important areas so administered are the cities of Dublin and Cork, and it is recognised that in both cases there has been an increased efficiency accompanied by a decrease in the rates. The Local Government (Temporary Provisions) Act, 1923, which empowers the Minister of Local Government and Public Health to suspend local authorities and appoint commissioners, limit such suspension in each case to three years. In the case of both Dublin and Cork this limit is now nearly reached, and it is expected that the Minister will seek further powers by legislation to enable him to prolong the period of administration by commissioners in those two cities, if not elsewhere.

Suspect Shaving-brushes.

Some alarm has been caused in Dublin by the warning given last week by the medical officer of health for the city that a consignment of suspicious shaving-brushes had reached Dublin last winter. Dr. M. J. Russell, in a letter to the papers, states that he has been informed by the medical officer of health for Glasgow that shaving-brushes imported from Czecho-Slovakia are infected with anthrax, and that, in December, two gross of these brushes were consigned from Glasgow to a firm of auctioneers at an address in O'Connell-street, Dublin. This firm is stated to have since gone out of business. Dr. Russell advises anyone who may have bought shaving-brushes at any of the auctions at the address stated to have them destroyed at once. No case of anthrax has yet been notified, but Dr. Russell's warning is very wise.

Death of Major-General R. H. S. Sawyer, A.M.S.

The medical profession of Dublin, as well as his old comrades in the Army Medical Service, will learn with great regret of the death of Major-General R. H. S. Sawyer, C.B., C.M.G., which took place after a short illness at his residence in Dublin on April 23rd. General Sawyer was educated at Trinity College, Dublin, and passed Bachelor of Medicine in 1879. He became a Fellow of the Royal College of Surgeons in 1887, and has been a member of the Council of that College since his retirement from the Service in 1918. He entered the Army Medical Service early in life, and served in the Hill Expedition of 1898, in the South African war, and in the Great War, being frequently mentioned in despatches. He was promoted major in 1893, lieutenant-colonel in 1901, and colonel in 1910. In the European war he was for some time Deputy Director of Medical Services at Boulogne, retiring at the beginning of 1918. Since his retirement he lived in Dublin, where he renewed many old and formed several new friendships. He was a modest, unassuming man, courteous to all, and much liked by those who were privileged to serve under him. He was in his sixty-ninth year, and enjoyed good health until a few weeks ago, when he contracted broncho-pneumonia, to which he succumbed.

PARIS.

(FROM OUR OWN CORRESPONDENT.)

Ultra-violet Rays and Growth.

Springer and Tardieu, of Paris, have been studying the effects of depriving animals of sunlight and the therapeutic action of ultra-violet rays. A litter of five rabbits born in underground obscurity was kept under observation. At the sixth week three of them —the least heavy and least developed of the five— were irradiated, and this treatment was repeated on about a dozen occasions with increasing dosage. All three at once underwent a remarkable change in their general development, weight, and vitality. The other two rabbits, which were more vigorous and were therefore chosen as controls, were kept without sunlight or irradiation, and showed a steady diminution in growth; their weight became less and less and at last they died paralysed in the hind quarters. Post-mortem examination revealed no definite macroscopic lesion and no sign whatever of rickets. The three rabbits which were irradiated had not been shaved, which proved that a covering of hair does not stop the rays. According to the authors, there are two main factors which have a part in the production and utilisation of the energy of growth, and which may explain the way in which ultra-violet radiation acts. One of these is the osmotic pressure; this regulates the amount of penetration into the body cells of the molecules whose fixation represents the degree of growth activity. The other is the production of intra-organic electricity. All the causes which increase the production of organic electricity—and notably ultra-violet rays—increase the phenomena of nutrition and growth. Ultra-violet rays appear to have effects apart from those of light, for they produce ozone and thus promote tissue oxidation, and they also augment the intra-organic electricity and osmotic pressure.

A New Treatment for Parkinsonism.

Three Lille doctors, M. Polonovoski, P. Combemale, and Nayrac, have been treating patients with Parkinson's syndrome with N-oxide of scopolamine, a new compound belonging to the group of genalkaloids. The results obtained have been very satisfactory. Much less toxic than scopolamine, this alkaloid has a therapeutic action in every way similar or even better. It has a considerable effect in reducing the troublesome rigidity, muscular hypertonus, tremor, and excessive salivation so characteristic of this condition. The doses used were from 2 to 4 mg. daily, and administration could be continued for several months without leading to tolerance.

Gastric Ulcers and Foreign Bodies.

Dr. Victor Pauchet, of Paris, recently operated on two false gastro-duodenal ulcers. One of the patients had swallowed a pin and the other four needles. These foreign bodies were implanted in the coats of the pylorus and remained there for several years. A diagnosis was only made at operation, for radiographic examination did not reveal the foreign body. In the first case he found an inflammatory mass in the pylorus produced by four needles shut in the walls of the stomach; in the second there was a pin which had been there for 30 years. The symptoms in both cases were pain and repeated hæmatemesis. Sometimes there were definite crises of pain with periods of freedom just like those met with in ordinary gastric ulcer.

Lymphatic Influenza.

Dr. Rousseau Saint-Philippe, of Bordeaux, has just described a special form of influenza that he has observed in children. It chiefly affects the lymphatic glands, connective tissue, and muscles of the cervical region. The symptoms begin with acute rhino-pharyngitis and they may be latent, subacute, or frankly acute. In this last form the puffiness suggests acute inflammation and suppuration seems likely; but resolution is the rule, and an abscess occurs only very exceptionally. The characteristic features of the disease are that it is always preceded or accompanied by slight catarrh of the upper respiratory tract, and that the subsequent swelling of the lower cervical region comes on abruptly and is afterwards definitely painful. It is best treated by hot applications, though local and general disinfection should not be forgotten.

Medical Responsibility.

A workman invited one of his friends, an orderly at a private hospital, to give him some injections of cacodylate, and these injections were made in the hospital clinic unknown to the doctor in charge. After the twelfth injection inflammation developed, which resulted in the workman being admitted to another hospital, and so he brought an action for 50,000 francs damages against the medical practitioner of the clinic, whom he tried to make responsible for the acts of the orderly. The tribunal dismissed this demand, considering that the workman had made a direct application to the unqualified man to take care of him, had not approached the doctor, had had the injections at his own risk, and, therefore, had no claim on the director of the clinic.

Payment of Interns in Paris Hospitals.

The interns in Paris hospitals receive from the Ministry of Public Assistance during the first year of their service an annual salary of 433 francs. This is raised gradually until, in the fourth year, they get 533 francs. They are also entitled at midday to food, whose value is estimated by the Ministry at Fr.2·90. These sums are inadequate nowadays. Five or six years of medical study are required before a man can become an intern, and he remains in that position for another four years. These doctors demand that their salary shall rise from 9000 francs a year for the first year to 10,200 francs for the fourth. They also ask to be lodged and to be paid during their month's holiday as is done in provincial hospitals. It is clear that a sum of 1000 to 1200 francs a month is the least that they can live on in Paris.

Salaries of Teaching Staffs.

Recent decrees have altered the payment of the teaching staff of the faculties. At Paris the professors of the third class receive 29,000 francs annually; those of the second class get 32,000, and those of the first get 35,000. The agrégés engaged in teaching receive 21,000 francs; if they give no instruction they have only 13,500. The chefs de travaux receive, according to their class, from 18,000 to 21,000 francs and the préparateurs from 14,000 to 17,000 francs. In provincial faculties the scale of payment is rather lower.

VIENNA.

(FROM OUR OWN CORRESPONDENT.)

Cause of the Deaths following Toxin-Antitoxin Administration.

SOME 18 months ago there was a most unfortunate occurrence in one of our children's institutes. Six children died soon after receiving prophylactic injection against diphtheria, the chief symptoms being those of heart failure, and although the incident was at first kept secret the facts soon leaked out and a good deal of public feeling was aroused. Official explanations followed which culminated in the assertion that by an unknown and hitherto novel process a disintegration of the liquid must have taken place which destroyed the antitoxin and left only the toxic substance in action. The entire supply of the toxin-antitoxin mixture which had been manufactured at this time was withdrawn from the market; this was an easy matter because there is only one institute making this product in Austria. Naturally the confidence of the public, not to speak of the medical

profession, was seriously shaken, and many people refused to have anything more to do with this kind of prophylactic injection although it is used extensively in other countries. There were those, however, who remained dissatisfied with the official version, and after prolonged investigation Prof. R. Grassberger, head of the public health department and professor of hygiene in the University of Vienna, now states that the cause of the accident was that in filling the ampoules the antitoxin was forgotten. According to this view the method was not in any way to blame, and it was simply negligence that was responsible for the disaster. Prof. Grassberger's open and bold statement has caused immense excitement, especially in the official quarters responsible for the institute which prepared the serum, and when he announced his intention of reporting on the affair and of producing his proofs in a paper to be read before the Medical Society such pressure was brought to bear on the society that the professor resigned his membership and withdrew his paper. Public attention, however, has now been thoroughly roused and both sides will have to produce their evidence; undoubtedly the matter will be cleared up before the courts in a short time.

Vacancies in the Medical Faculty of Vienna.

A serious situation in the University of Vienna has been caused by the unexpected death of several professors within a short time of one another. A few weeks ago Prof. Friedrich Dimmer, the well-known ophthalmic surgeon, died at the age of 70 years, and his eye clinic, of which he had been the director for many years, will perhaps be dissolved. Such at any rate was the intention of the Ministry of Finance which has to find the funds for the institution, and naturally it has caused widespread consternation in medical circles. It has been justly pointed out in numerous articles and resolutions that the ever-increasing importance of ophthalmology, and of Vienna ophthalmology especially—we may recall the names of Fuchs, Fäges, and Arlt—did not allow of a purely bureaucratic measure of this kind, which would drive away many students and doctors from this country, and thus result in the loss of more money than could be saved in abolishing the expenses of the clinic. It is to be hoped that the idea will be definitely abandoned. The University staff has suffered another serious loss by the sudden death of Prof. Josef Kyrle at the age of 46 years. He had already done important work in dermatology, his principal investigations being concerned with the treatment of syphilis by malaria, the histology of skin diseases, and the eunuchoid conditions. He was destined to succeed Prof. Gustav Riehl, who is now finishing his honorary year and has passed his seventieth year, when he has to retire according to the rules of the University. Kyrle was a brilliant teacher whose clarity and impressive diction were reminiscent of the famous teachers of 40 years ago when Vienna was the Mecca of medicine.

Luetic Infection from a Corpse.

At a recent meeting of practitioners a case was demonstrated of a rare infection with lues, when a student had injured his finger at a post-mortem on a prostitute who had been dead for about four hours. An ulcus durum appeared in due course at the site of the lesion and a salvarsan course is being given to the student. A similar case was reported by Prof. Lang in Vienna in 1900, and his patient was demonstrated some time ago by Dr. J. Löwy in Prague suffering from luetic hemiparesis, whilst Prof. A. Ghon has also reported the occurrence of luetic infection from a corpse only two hours after death. These cases prove the vitality of the *Spirochæta pallida* and should be a warning to pathologists.

MANCHESTER DENTAL HOSPITAL.—The forty-second annual report, whilst recording an increase of nearly 2000 in the number of patients treated during the year, states that only £504 has been subscribed in answer to an appeal for £10,000, and that the deficit is now over £2000.

BUCHAREST.

(FROM OUR OWN CORRESPONDENT.)

Public Instruction in the Laws of Health.

AT a meeting of the Medical Society held recently Prof. Manicatide recommended the teaching of hygiene in the lower classes of secondary schools. As he pointed out, nearly every medical officer of health year by year deplores the immense wastage of infant life, and, though some of this wastage is the result of neglect and indifference, very much more is due to ignorance. Hundreds of lives are lost every year because the public does not know the simple laws of health, and a large number of infants' lives are sacrificed because people cling to old superstitions about measles and whooping-cough. These are still thought of as mild diseases of no account, in spite of oft-repeated warnings that they kill more than all the other so-called dangerous infectious diseases put together. In some parts of Roumania it is commonly supposed that if a child with whooping-cough be set near an open fire so that he inhales the smoke he will get rid of the disease after one or two sittings. Efforts have been made to enlighten the public by scattering broadcast leaflets dealing with infant feeding and the like, and popular lectures are given. But the fact remains that amongst the poorer classes most mothers are unteachable, and it is now accepted that the best way to conduct the campaign for health is to give lectures and introduce the teaching of hygiene in the lower classes of secondary schools instead of leaving it till the children reach the top form, as has been done heretofore. By inculcating a few of the elementary facts about personal hygiene, domestic hygiene, and the feeding of infants into the next generation of school-children—and especially of girls—the public health would undoubtedly gain enormously.

Mental Derangement after Typhoid.

In a recent paper on this subject Dr. Munteanu referred to the great vagueness of the literature, the only comprehensive work attempted having been done by some Paris students a score of years ago, and later by an American, Dr. Edsall. The frequency of mental changes, the character of the psychosis, and the prognosis when they have developed are the points of special interest. The idea among clinicians that derangement is relatively rare is an erroneous one, about 100 cases being easily found in literature. It is commonly stated that the changes are maniacal, but many cases of dementia and melancholia have been recorded. A boy of 11 years in Dr. Munteanu's practice, who had severe typhoid and was subsisting on a low diet on account of hæmorrhages, developed delusions and symptoms of meningitis. He recovered from both. Another child developed a psychosis characterised by irrelevant fears, delusions of all the senses, and extreme irritability. His condition gradually improved. Clinicians say that the cases recover; psychiatrists say that they do not. The best policy is to feed the patient well whenever mental symptoms occur, as a prophylactic against dangerous psychosis, for there is certainly some relation between the period of starvation and the incidence of insanity in these cases.

Changing Mortality Statistics.

The Roumanian Statistical Bureau was established in 1923, and the first exact report on general mortality was published last month. It is demonstrated that the increase in pneumonia deaths from 1922 to 1925 was 2 per cent.; of heart disease, 5 per cent.; of apoplexy, 7 per cent.; and of cancer, 8 per cent. On the other hand, there has been a decrease of nearly 25 per cent. in deaths from consumption and of 15 per cent. in bronchitis. Better knowledge of infantile complaints and the growing use of the different antitoxins and serums have considerably reduced the mortality from the diseases of childhood in the last

20 years. From 1922 to 1925 there has been a decrease of deaths from cholera infantum of 16 per cent.; from diphtheria of 18 per cent.; and from convulsions 24 per cent. Some common ideas about the prevalence of diseases in certain areas are dispelled. Consumption caused, in 1925, deaths to the number of 113 per 100,000; in the same year the death-rate from this disease in Poland, a much colder country, was 138 deaths per 100,000.

PUBLIC HEALTH SERVICE IN POLAND:
NEW SCHOOL OF HYGIENE.

(FROM A CORRESPONDENT.)

THE new School of Hygiene was opened in Warsaw on Tuesday, April 20th, with appropriate ceremonial. The Prime Minister of Poland, Count SKRZYNSKI, opened the proceedings in French to an audience which included representatives of many European countries, of the United States of America, and Japan. He was followed by Dr. WROCZYNSKI, General Director of the Public Health Services of the Republic, who, speaking on behalf of the Minister of the Interior, welcomed the assembly who had been invited to participate in the inauguration of the new section of the Institute of Hygiene—namely, the School of Hygiene. The erection of the School, he said, was rendered possible by a generous subvention from the Rockefeller Foundation, and while he felt much gratitude for this most effective help, which had enabled his Government to open the new School, he expressed special appreciation of the moral support thus evidenced. In response to the subvention the Polish Government would provide for the maintenance of the School, which was erected on land belonging to the State; but he indicated that while the School is open it is not yet finished, equipment and such essentials as a library having yet to be found, in spite of additional and considerable expenditure incurred by the Government.

" The Rockefeller Foundation," he continued, " have done more for us. The housing difficulties make it imperative for us to provide dormitories for the students of the School. We were anxious, too, to set up a field station giving opportunity for practical work for the teaching staff and students, an office for the district medical officer of health, and a series of preventive medicine institutes. The Foundation, being prevented by its programme from giving financial assistance for the establishing of dormitories, was good enough to obtain for us coöperation with the Joint Distribution Committee, of New York, who will acquire jointly the necessary property for the Government.

" The creation of the School of Public Health," he said, " dates back to 1920, the first period of political existence of independent Poland, when epidemics were still raging on eastern territories and great effort was necessary to control the spread of infectious diseases consequent upon the war and the movements of refugees. We have learnt during that period that the efficiency of an epidemiological campaign and the effectiveness of all sanitary measures depend, in the first place, upon the standard of training of public health services, of their scientific equipment, and ability to perform the important task of safeguarding the safety and health of the people. The Institute of Hygiene, under its first name, that of the Central State Epidemiological Institute, was created in 1919, on the initiative of Dr. Ludwik Rajchman, its present director, and also the director of the Health Section of the Secretariat of the League of Nations, Dr. Tomasz Janiszewski, at the time Minister of Public Health, giving full support to the project."

Dr. Wroczynski then detailed the aims of the Institute and School, showing them to be designed to cover all the usual activities for the production of serums and vaccines, for biochemical work, for the investigation of epidemiological problems, and for providing machinery for the technical researches which form the basis for State and scientific measures. He showed that a school of public health was the logical development of the Institute, the object being to train fully qualified officers for administrative service, and added that Dr. Witold Chodzko, Minister of Public Health in 1921, had been appointed director of the School. An agreement had been concluded, he said, for full coöperation between the Rockefeller Foundation and the Government, the Foundation providing scholarships which enabled the present teaching staff to acquire the American methods of sanitation, raising the technical standard of the sanitary personnel. A legislative measure now enjoined that candidates for first-grade public health posts had to undertake a special course of hygiene lasting one year and including practice as well as technique. He pointed to the rapid development of public health service in Poland since the war, and insisted that the training of the public health officer could not stop at theory, for such an officer required practical knowledge of administration, of the organisation of sanitary institutes, and of the general importance of public health as it presented itself to the statesman and the legislator. He continued:—

" Our School of Hygiene, which proposes not only to train medical officers for the public health of the State, but also men destined to work in the State administration or the boroughs, has evolved a programme in which special attention

A B

The School of Hygiene (A) and State Institute of Hygiene (B), Warsaw.

is being given to the practical development of their work. A series of model sanitary districts, which keep in direct contact with the School as well as other institutions, has already been organised—one of an urban type and the other of a rural. This School forms, with the Institute and the public health service of the State, a complete unit, in a position to teach in the light of immediate requirements and in close contact with the problems which present themselves in collective life. The welfare, the physical and moral standards of the population, the efficiency of labour, and the progress of the country depend upon the competence of the administration. At the very moment when the reorganisation of the public administration must be effected on strictly economical lines, it is necessary to increase the efficiency of the individual to as high a level as possible. The realisation of the ideals can only be reached with a perfectly well-trained personnel, if a small one."

The ceremony received a special significance in view of the presence of representatives of foreign Governments, of members of the Public Health Training Commission, and of members of the Health Committee of the League of Nations. It closed with a formal welcome in the name of the Polish Government to the eminent guests and to the representatives of the Rockefeller Foundation.

New Buildings.

The picture of the School and Institute shows the buildings in juxtaposition. The new School, over which the assembly was conducted, is a large building excellently adapted for the various purposes which it is intended to serve, and a good beginning has been made in the equipment, whose deficiencies were noted by Dr. Wroczynski. The building is on five floors with a basement. The top floor is reserved for the residential accommodation of the staff; the third floor is devoted to the chemical laboratory and chemical class-rooms; the second contains the grand amphitheatre and various lecture-rooms; the first floor is devoted to a museum of hygiene, in which exhibits relating to industrial hygiene and occupational physiology are included. On the ground floor are placed the students' bacteriological laboratory and class-rooms, and in the basement, in addition to the various electrical and other installations, there are a dining-room for the staff and the additional amenities.

Visits were also paid to two model sanitary districts, one urban and one rural, and the general opinion of the representatives of other countries present at the function was one of high approval of the energy and comprehensiveness displayed in the construction of the buildings and in the ideals of work.

MEDICINE AND THE LAW.

Time-limits in Actions of Negligence against Hospital Doctors.

THE legal point left outstanding in the case of Venn *v.* Todesco and Elder has been decided in Mrs. Venn's favour. At two previous trials the jury disagreed over the charges of negligence in diagnosis which she brought against the two doctors who are the defendants. The way is now open for her to proceed to yet a third trial if she is not deterred by the strong personal opinions expressed by Mr. Justice McCardie [1] as to the inadequacy of the grounds of those charges. The defence was a denial of negligence and a reliance upon the Public Authorities Protection Act of 1893. The points of law now decided were twofold. First the plaintiff contended that Dr. Todesco and Dr. Elder could not rely upon the Act at the second trial last February because they had voluntarily abandoned that line of defence at the first trial last June. The judge was against the plaintiff here. He said the February proceedings were a trial de novo and the defendants were not precluded from pleading the Act. The second point was more complicated. Mrs. Venn's husband was in the Croydon Borough Hospital at the period when the alleged negligence of the two defendants occurred. Dr. Todesco was resident medical superintendent of the hospital, and Dr. Elder was assistant resident medical officer. Mr. Venn left the hospital and passed out of their care on April 26th, 1922. If the Public Authorities Protection Act, 1893, applied, then Drs. Todesco and Elder could not be sued unless the writ was issued within six months of that date—i.e., before Oct. 26th, 1922. The action was, in fact, begun (by the issue of a writ) on Dec. 6th of that year—after the time-limit had elapsed. But there is another Act, Lord Campbell's Act of 1846, which gives widows certain rights of action on the death of their husbands provided that they sue within 12 months of the death. Mr. Justice McCardie, in the face of a network of legal decisions which only the House of Lords would have power to overrule, has felt obliged to decide that Lord Campbell's Act applies to the exclusion of the Public Authorities Protection Act, and therefore Mrs. Venn's action, begun within 12 months of her husband's death, was not time-barred.

The learned judge hardly disguises his view that, as a general principle of statutory interpretation, there is no reason why the two Acts should not be construed together, in which case the defendants would have been able to protect themselves by means of the narrower time-limit of six months under the Act of 1893. And on general considerations he points out that his ruling may be unfair to persons in the position of Drs. Todesco and Elder. If the 1893 Act does not operate where death has occurred, if the time-limit in such cases is fixed only by Lord Campbell's Act, what follows? A man may be injured by alleged negligence and may not die till many years afterwards. His widow will then have a further 12 months in which to issue her writ. Thus the unfortunate defendant will be seriously prejudiced by the passage of years in meeting the case and dispelling the allegations made against him. This prejudice, due to lapse of time, is the very evil which the Act of 1893 was designed to prevent. It is to be hoped that the House of Lords may have an early opportunity of reversing the decisions by which Mr. Justice McCardie as a judge of the High Court was bound, and of assuring to the medical officers of hospitals the protection which Parliament presumably intended them to enjoy.

The Harnett Case: Dr. Fisher Wins.

In Harnett *v.* Fisher the defendant doctor has succeeded upon the legal point, though the jury had found—as stated in this column last week—that the plaintiff had been sane in November, 1912 (when Dr. Fisher certified him), and that Dr. Fisher had not used reasonable care in certifying him. Dr. Fisher was able to plead the Statute of Limitations, an Act of James I., which bars out claims of this kind unless they are brought within six months of the date when the cause of action arose. Section 7 of the Act is a proviso that, where a plaintiff has been an infant or *non compos mentis* at the time when the alleged breach of duty towards him occurred, the period shall not begin to run until he comes of age or becomes sane. This would have helped Mr. Harnett if he had been *non compos mentis* when Dr. Fisher examined him in 1912, but the jury has decided that he was sane at that date, and by this finding in his favour they have deprived him of his extension of time for suing. It had been argued for the plaintiff that a man who has been shut up in a lunatic asylum must have the rights of a lunatic under the proviso to Section 7 of the Statute of Limitations. This the judge could not accept, as the plaintiff could not be simultaneously sane for one purpose and insane for another. Mr. Justice Horridge was impressed by the hardship to Mr. Harnett. Others will not forget that a doctor who is sued in 1926 for an incident which occurred in 1912 is at a grave disadvantage in defending himself. Dr. Fisher's case was conducted for him throughout by the London and Counties Medical Protection Society.

A Flaw in the Children Act.

The Children Act of 1908 gave new powers of removing children from the custody and control of undesirable parents, but these powers do not go far enough. A serious omission is disclosed by a recent prosecution at the Hertfordshire Quarter Sessions,

[1] THE LANCET, March 13th, p. 560.

where a father pleaded guilty to three counts charging him with indecently assaulting his own daughter, aged 14. After he had been sentenced (to nine months imprisonment with hard labour), the court made an order—presumably under Section 21 of the Act—giving the custody of the child to her uncle and aunt until she reaches the age of 16. But there is another younger daughter, aged 8, in respect of whom there was no charge against the father, but of whom the father hardly seems a suitable person to have custody, the mother having died some years ago. As the law stands, when the father is released at the end of his sentence he will be legally entitled to demand custody of this younger child. Questions have been asked in Parliament of the Home Secretary, who replies that steps have been taken for the protection of the younger daughter, but that there is admittedly a defect in the Act. The position is partially dealt with in paragraph 99 of the report of the Departmental Committee on Sexual Offences against Young Persons (Cmd. 2561). The Committee there recommends that incest should be inserted among the offences enumerated in the first schedule of the Children Act; this would allow magistrates to take all the means provided by the Act for the protection of the girl victim if under 16 and to make maintenance orders. In the interests of the girl's sisters the report goes on to recommend that machinery should be devised (in cases like that which was recently heard before the Hertfordshire sessions) to refer the circumstances of the girl and her sisters to a petty sessional court so that action may be taken for the guardianship of them all, due regard being had to the rights of the mother. Not much has yet been done to give legislative effect to the Committee's recommendations.

Abnormal Conduct and the Inference of Insanity.

In the proceedings just mentioned counsel for the defence asked the Bench to consider the medical aspects of the case, and expressed the hope that the day was not far distant when a man like the accused would be put in a hospital ward instead of a prison cell. This was said by way of plea in mitigation of sentence; insanity was not raised as a defence. The Bench does not seem to have paid special attention to the plea, but, just before Easter, there was a somewhat unusual case in which the Court of Criminal Appeal went out of its way to infer insanity from the abnormality of the accused person's behaviour. At a criminal trial at the Cornish assizes it appeared that a man had induced a firm of solicitors to draw up a will under which his nephew left him his money. He then forged his nephew's signature and formed, as it seems, a plan to bring the will into operation. He borrowed his nephew's gun and he lay in wait in his nephew's garden, watching for his nephew to come out of the house. Unaware of their danger, the nephew's wife and maidservant came out and were shot at, one being injured slightly, the other seriously. Eventually the accused was apprehended and put upon his trial. He was sentenced to 14 years' penal servitude at the assizes, but the Court of Criminal Appeal reduced the sentence to one year's imprisonment. The appeal was not very fully reported, but it appears to have been thought that the facts indicated insanity and that the court below had not given sufficient attention to this aspect of the man's conduct. It is believed that counsel for the defence at the assizes did, in his address to the jury, dwell upon the indications of insanity; but counsel's speeches are the only part of the trial which is not officially reported on the shorthand notes; consequently, they do not appear on the dossier of documents which is presented to the Court of Appeal. That court presumably felt that it had not the power or the justification to change the verdict into one of acquittal on the ground of insanity. In the absence of further information it seems a strange result, for, if a man is insane enough to make it proper to cut his sentence down from 14 years to one year, then even the one year's imprisonment seems a year too many, and one would expect to see him treated as a criminal lunatic. And if the judges found this strong inference of insanity in the mere recital of the prisoner's strange behaviour, and if they partly acted upon the inference unassisted by mental experts' evidence, is this not one of those cases which suggest that a trained alienist would be exceedingly useful if called in to act as examiner and assessor to the Court of Criminal Appeal?

The Home Secretary has withdrawn from Dr. Samuel Grahame Connor, of 21, Dryden Chambers, Oxford-street, London, the authorisations granted by the Regulations made under the Dangerous Drugs Act, 1920, to duly qualified medical practitioners to be in possession of and supply raw opium and the drugs to which Part III. of the Act applies.

The Services.

ROYAL NAVAL MEDICAL SERVICE.

Surg. Rear-Admiral E. Sutton succeeds Surg. Rear-Admiral C. M. Beadnell at the Royal Naval Hospital at Chatham; and Surg. Rear-Admiral D. W. Hewitt succeeds Surg. Rear-Admiral A. Maclean at the Royal Naval Hospital, Haslar.

ROYAL ARMY MEDICAL CORPS.

W. D. Dyson and J. E. Stokes to be temp. Lts.

TERRITORIAL ARMY.

Capt. J. E. Rusby (R.A.M.C. Res. of Off.) to be Capt.
Capt. W. J. Hirst resigns his commn. and retains his rank.
Capt. H. B. Dodwell (late R.A.M.C., Spec. Res.) to be Capt.
Lt. A. Swindale (late R.C. of Signals, T.A.) to be Lt.
Lt. W. T. de Vere Thomson (late R.G.A., T.F.) to be Lt.

ROYAL AIR FORCE.

No. 602 City of Glasgow (Bombing) Squadron: J. C. H. Allan to be Flight Lt.

INDIAN MEDICAL SERVICE.

Majs. Khandu Ganpatrao Gharpurey, D. C. V. FitzGerald, B. Higham, S. T. Crump, and J. MacG. Skinner to be Lt.-Cols.

Capts. Kotyvenkata Rama Rao, Hari Chand, Nehchal Das Puri, Monindranath Das, Jagannath Balkrishna Vaidya, J. M. R. Hennessy, C. H. N. Baker, M. L. Treston, Amir Chand, R. Lee, and C. de C. Martin to be Majs.

The King has approved the retirement of Lt.-Col. W. J. Collinson and Maj. R. B. Nicholson.

Colonel F. H. G. Hutchinson, A.D.M.S. of the United Provinces District, will succeed Major-General T. H. Symons as Surgeon-General with the Madras Government. Lieut.-Colonel R. Row, O.B.E., has been appointed Professor of Morbid Anatomy and Curator of the Museum Grant Medical College. Major J. D. Sands, professor of medicine Medical College, and first physician College Hospital, officiates as Principal of the College. Major A. W. Truter has handed over charge of Central Jail, Montgomery, to Captain N. D. Puri. Dr. O. C. Vardon officiates as Director of the Pasteur Institute, vice Lieut.-Colonel Hodgson. Dr. M. Stowe has been appointed to the Agra Women's Medical School, vice Dr. N. E. Trouton transferred. Dr. R. J. L. Sladen, district surgeon G.I.P. Railway, has been appointed Chief Medical Officer, Eastern Bengal Railway, vice Dr. T. H. Bishop, granted leave. Dr. K. W. Blinkworth has been appointed Civil Surgeon, Garo Hills, Assam. Major W. O. Walker, civil surgeon, Serampore, has been appointed Civil Surgeon of Hooghly. Dr. J. F. C. Rose Meyer has been appointed Resident Medical Officer, European Civil Hospital at Allahabad, vice Dr. H. P. Burns transferred. The following have been granted leave: Lieut.-Colonel F. A. F. Barnardo, principal, Medical College, Calcutta; Captain G. Shanks, professor of pathology, Medical College, Calcutta; Lieut.-Colonel E. C. Hodgson, director, Pasteur Institute; Lieut.-Colonel W. Lapsley, civil surgeon, Agra; Major A. E. Mathews, civil surgeon, Hardoi; Dr. T. H. Bishop, chief medical officer, Eastern Bengal Railway; Dr. H. G. H. Munrowd, civil surgeon, Garo Hills; Lieut.-Colonel C. A. Godson, civil surgeon, Hooghly.

DEATHS IN THE SERVICES.

Fleet-Surgeon Hugh Winckworth Macnamara, R.N., retd., who died on April 16th at Peppard, near Reading, at the age of 66, qualified with the M.R.C.S. Eng. in 1880 and obtained the L.R.C.P. Lond. two years later. In the following year he joined the Royal Navy and served as surgeon in

various ships, including the *Surprise* in the Mediterranean, when the Duke of Edinburgh was Commander-in-Chief. In 1890 he was appointed to the *Excellent* gunnery school at Portsmouth, and later to the dockyard at Gibraltar, when in 1895 he was promoted to staff surgeon. In the meantime he had taken the D.P.H., being one of the first, possibly the first, naval medical officer to do so. He then joined the *Cordelia* in the West Indies, and in 1899–1901 was on the staff of the Chatham Hospital. In 1901 he was appointed P.M.O. to the *Ophir*, which conveyed the Prince and Princess of Wales, now the King and Queen, to India, and later served in China, being promoted Fleet-Surgeon in 1903. Other posts which he held were those of senior medical officer of the training ship *Impregnable* and of the *Royal Arthur* and *Euryalus*, flagships of Admiral Sir Day Hort Bosanquet in the West Indies, while he was also in medical charge of the R.M.L.I. at Portsmouth, and subsequently was afloat in the *King Alfred*, of the Home Fleet, at Devonport. In September, 1912, he joined the *Lion*, flagship of Rear-Admiral David Beatty, and retired in 1913.

Col. Charles Arthur Johnston, C.B., D.S.O., I.M.S. (retd.), who died in a nursing home in London on April 23rd in his sixtieth year from encephalitis lethargica, was the son of the late J. W. Johnston, of Rajahmundry, India, and was educated at Edinburgh University, where he graduated in medicine and surgery in 1888. He entered the Indian Medical Service in 1890. He served in Manipur in 1891 (medal with clasp), in the Burma campaign, 1891–92 (mentioned in dispatches and clasp), the Tirah Campaign, 1897–98 (medal with clasp), and in China in 1900 (medal). During the war he served in East Africa in various capacities and was several times mentioned in dispatches, and awarded the C.B., Military Division, and D.S.O. in 1917. He was severely injured during the campaign by being blown up on the railway. He was promoted to Major in 1902, to Lieut.-Colonel in 1910, and to Colonel in 1920. Colonel Johnson was a keen medical officer and rendered valuable service in connexion with the treatment of malaria. He was a popular officer throughout the Indian Army and married, in 1912, Isabel, elder daughter of the late Dr. J. H. Honeyman, of Auckland, New Zealand, and of Lady Bruce-Porter. He leaves a widow and one son.

The death on April 5th of Major George Pritchard Taylor, R.A.M.C., who was mauled by a tiger near Mhow while out duck shooting, is reported from Bombay. Major Taylor was appointed lieutenant in 1909 and captain in 1912.

INFECTIOUS DISEASE IN ENGLAND AND WALES DURING THE WEEK ENDED APRIL 17TH, 1926.

Notifications.—The following cases of infectious disease were notified during the week: Small-pox, 213 (last week 190); scarlet fever, 1388; diphtheria, 893; enteric fever, 36; pneumonia, 1876; puerperal fever, 46; cerebro-spinal fever, 6; acute poliomyelitis, 2; encephalitis lethargica, 64; dysentery, 13; ophthalmia neonatorum, 112. There were no cases of cholera, plague, or typhus fever notified during the week.

Of the 213 cases of small-pox 103 were notified from the county of Durham, scattered over 20 or more boroughs and urban districts, while cases were reported from all except two of the nine rural districts, the areas most affected being Chester-le-Street, Easington, Houghton-le-Spring, and (especially) Lanchester. From the county of Derby 46 cases were reported, all except three from Derby C.B. itself. A second case has been reported from the county of Lincoln, Gainsborough being the new centre; the remaining cases as before from the counties of Northumberland, Nottingham, and Yorks, West Riding.

Deaths.—In the aggregate of great towns, including London, there was 1 (0) death from enteric fever, 99 (43) from measles, 9 (3) from scarlet fever, 59 (4) from whooping-cough, 41 (13) from diphtheria, 66 (11) from diarrhœa and enteritis under 2 years of age, and 302 (59) from influenza. The figures in parentheses are those for London itself. The notified deaths from influenza for the 105 great towns are only eight in excess of those of the previous week, London itself showing a substantial diminution from 74 to 59. The number of measles deaths has just failed to reach 100.

INFLUENZA IN SCOTLAND.—In the Registrar-General's weekly return for the week ending April 17th the deaths from influenza in the principal towns of Scotland numbered 84, being 31 fewer than in the previous week. In Glasgow the recorded deaths from influenza numbered 45 (including cases where influenza was a contributing cause of death), and from all respiratory diseases (not tuberculous) 134.

Dr. J. Hall-Edwards, of Birmingham, who has lost one hand and several fingers of the other as a result of dermatitis due to work with X rays, has been elected an honorary life member of the British Medical Association.

Correspondence.

"Audi alteram partem."

MINERS' NYSTAGMUS: A TENTATIVE THEORY.

To the Editor of THE LANCET.

SIR,—The suggestion of Dr. J. Prosser Davies as to the origin of miners' nystagmus contained in your issue of April 24th is certainly ingenious, all the more so that interference with the vestibular nerve may produce nystagmus. At the same time whole areas and, indeed, whole countries are free of the disease. Are we to infer that in these areas and countries the engine-drivers are all very cautious and careful men and that in the districts where the disease abounds they are all somewhat reckless?

To my mind the disease is due to a poison of some kind. Dr. Robson suggests that it is due to carbon monoxide inhalation. There is something to be said for that view, but, personally, I regard it as due to some toxin. In its paroxysmal characters it shows some similarity to ague and in other features it reminds me of encephalitis lethargica.

I am, Sir, yours faithfully,

Glasgow, April 24th, 1926. FREELAND FERGUS.

X RAYS IN CANCER.

To the Editor of THE LANCET.

SIR,—Most surgeons in this country will be surprised to read Dr. Reginald Morton's letter (THE LANCET, April 17th) in regard to their views and prejudices and to learn that they have taken no very serious notice of what has been going on at the Erlangen clinic for some years past. And they will, I think, be interested to learn that a "fair and honest" trial of the Erlangen technique in place of operating would alter the lot of the patients suffering from cancer for the better, "mentally, physically, and materially." There are many surgeons far better fitted to reply to these criticisms than myself. But it so happens that on March 30th I had the honour of delivering the ninth Silvanus Thompson lecture before the Röntgen Society, and I took for discussion my experience of the treatment of growths of the urinary organs with the hard X rays. And it further happens that I have had the privilege of Dr. Morton's assistance in treating a number of cases of malignant disease of the urinary organs with the Erlangen technique.

The use of the hard rays in cancer has been for some time under careful trial in this country. If all the cases that are seen in the early stage have not been turned over to the radiologist the reason is that good results are obtained by operation in early cases, whereas the result of treatment by the hard X rays in such cases has not come up to the extravagant claims made for it in some quarters. In my experience the results of operation for, say, carcinoma of the bladder, are good in regard to immediate and remote results and are steadily improving as early diagnosis becomes more common. Dr. Morton's statement that surgery in malignant disease is at a "dead end" is, so far as my experience is concerned, quite inaccurate. Further, Dr. Morton claims for radiology that it is without the risks of operation. This is simply not true. There are many serious risks connected with the use of the hard rays, and of these Dr. Morton must be perfectly aware.

Dr. Morton claims for himself "a high degree of success in the relatively few early cases of malignant disease that have been referred to me before there had been any surgical interference." This brings me to a second point. I submitted ten cases of malignant growth to Dr. Morton for treatment by the hard X rays. None of these cases had been operated upon; eight were early cases in good and even robust health, and with a small or moderate-sized circumscribed local

growth. Two were advanced cases. Nine of these patients are dead (one from cause apart from the disease or rays) and one is alive without improvement. The final result of these cases must surely have been overlooked by Dr. Morton in making the claims embodied in his letter.

I do not wish to give the impression that I am antagonistic to the use of X rays in cancer. The reverse is the fact, and my Silvanus Thompson lecture is evidence of this. But I feel most strongly that Dr. Morton's statements in regard to surgical prejudice are unfounded, and that his claim as to the results of the Erlangen technique is extravagant.

I am, Sir, yours faithfully,

JOHN THOMSON-WALKER.

Harley-street, W., April 21st, 1926.

EARLY PROGNOSIS IN CANCER AND TUBERCULOUS DISEASE.

To the Editor of THE LANCET.

SIR,—In these diseases the general practitioner is up against the natural anxiety of the patient and of the immediate relations and friends; this anxiety takes the form of inquiry as to the chances of a permanent cure. Long experience teaches that what is told in "utmost confidence" to a relation or friend sooner or later leaks round the entire family, and so it becomes a matter of self-protection to maintain continuity of opinion when trying to give real help to people in distress.

The general intelligence of the public in the matter of disease is far in advance of, say, 20 years ago. In putting a question requiring an opinion they are not to be put off with an answer devoid of "yea" or "nay," nor with a quotation from long-worded reports of the bacteriologist, pathologist, or radiologist; it will not unload the responsibility for an opinion from the practitioner in attendance.

We "G.P.'s" are not in the happy position of the medical or surgical specialist hidden away in the impersonality of a consulting-room; we are on the ground every day to minister to the latest mental or physical requirement. I suggest the following as a good working basis for prognosis; I am leaving out the obviously hopeless cases, applying it only to those who look well and who the uninformed think only "out of sorts."

The subject first gains knowledge of anything wrong by a hæmorrhage from the lung or vagina, or the discovery of a small tumour in the breast or neck, or possibly abdomen. He or she is reported "out of sorts and avoids people." The two early symptoms forming an unfavourable prognosis are: (1) a continuously increased pulse-rate; (2) an altered mentality, taking usually the form of secretiveness.

1. *Increased Pulse-rate.*—Here I exclude Graves's disease and primary endocardial trouble, but I do not exclude anæmia, often the first symptom of tuberculous disease in the lungs, or pleura, or of a "silent" malignant growth. This increased pulse-rate is of ill omen if it is out of proportion to the temperature of a problematical pulmonary tuberculous infection. When I say it is "problematical" that the lung has become involved, it is because many early cases lack the usual physical signs, the stethoscope failing to find a small deposit in the centre of a lobe of the lung; happily the hyperæsthesia of an intercostal nerve is an unfailing sign-post, and explains the increased pulse-rate.

Illustrative Cases.—A woman, aged 34, consulted me about a tumour. It was the size of a large walnut, situated in the upper and inner quadrant of the left breast; there was no other evidence of disease; pulse-rate 80–90, temp. subnormal, and continued so morning and evening for seven days before operation. I excised the breast and subcutaneous tissues and muscles from the axilla to below the costal margin, and the pathological report was duct carcinoma. In answer to the usual question from the friends I gave a bad prognosis; the increased pulse-rate continued until my patient died within 12 months of cancer in the region of the stomach. This is typical of many cases that could be quoted.

A boy, aged 19, with sarcoma of pelvic bone, and a man, aged 64, with sarcoma of thigh. Both had a pulse-rate exceeding 86 and under 100, and both died within 12 months with metastases.

A woman had a tumour of the breast removed, who, four months later consulted me for palpitation. The pulse was 98, and I found hyperæsthesia of the lower spinal cutaneous nerves on the left side; she died within a few months of a growth in the left pelvic area. Prognosis in these and like cases was governed by the persistent increase of pulse-rate; this was the *only* early physical sign, and the general appearance denoted health.

This pulse-rate of ill omen ranges from 80 to 86, temperature often subnormal.

2. The *Mentality of the patient* is, in my opinion, most significant; it is equally helpful with the pulse-rate in suggesting a good or bad prognosis. Excluding cases of acute dementia, my observation over a period of 25 years leads me to definitely believe that in tuberculous and malignant diseases, where there is a distinctly altered mentality, however slight, a basis exists for giving a grave prognosis. The friends of the patient will describe this condition in various ways—"not the same," "funny in her ways of late," "odd," "not so open as she used to be"—the sum total of all this can be covered by the word *secretive*. When an ordinary individual gradually alters the usual mode of dealing with friends and becomes "peculiar" in small matters—just very reticent or reserved, but *not* spiteful or malicious, and displaying no hallucinations—then search for a blood infection cause.

3. The individual with altered mental condition avoids a consultation with a doctor, even when the latter is an old friend.

Illustrative Cases.—A deep ulcer in the breast of an old lady was discharging foul-smelling pus, but her husband and maid knew nothing about it until she sent for me, "so that I could sign her death certificate." The employer of an elderly butler asked me to see him as the butler's "feet smelt." I found a large fungating growth of the anus, but as in the former case, no one in the house had any knowledge of the condition or had heard any complaint. In a case of slight melancholia the patient had "pain in the back," when aspiration in the region of the right sacro-iliac joint found pus teeming with T.B. Once I was called to see a delicate-looking woman who had cut her throat. She had a tuberculous deposit at the left apex, which was unknown and untreated, and she died a few weeks after the attempt at suicide from general tuberculous infection.

Early cases are missed over and over again because the modern practitioner is not taught that clinical observation is the first line of knowledge, the help of the various specialists being the second, and "team-work" is not available in scattered country districts. The practitioner having no "team" at his command, his usefulness and success depend upon his skill as a clinician, and the good clinician notices small symptoms. With him the *character* of a cough leads to an examination of the middle ear; the *type* of pain in the sole of the foot calls for an examination of the sacral plexus via the rectum; a persistent pain over the occiput calls for a digital examination for a tender area in the maxillæ, and later an X ray to prove the clinical belief that there is a bulbous end to a tooth.

4. I quote such cases to show that the clinician can and must be self-dependent; such dependency is strengthened and encouraged by reading the inspiring article in THE LANCET of last week by Mr. Hastings Gilford on "A Method of Cancer Research." The true clinician must try and know all that is to be known. Again and again he has to ask for proof of his findings from the bacteriological and biochemical laboratories; he is a partner in research work.

A persistent increased pulse-rate and a slightly altered mentality I have found important sign-posts in early tuberculous and cancerous infections. Marcus Aurelius said: "He who does (? says) nothing makes *no* blunders." He evidently had forgotten the medical practitioner.

I am, Sir, yours faithfully,

W. B. COSENS, M.R.C.S. Eng.,
Consulting Surgeon, Dorset County and Dorset Mental Hospitals.

Dorchester, April 26th, 1926.

Obituary.

JOHN ALFRED KNOWLES RENSHAW, M.D. CAMB.

THE death of Dr. Knowles Renshaw, which occurred at his home at Sale on April 25th, came unexpectedly, although for some time he had suffered from heart trouble. Dr. Renshaw belonged to a family of doctors which has made its home in the Altrincham and Sale district. At one time there were 12 Renshaws whose names appeared in the Medical Directory, and they all belonged to this family and lived within four miles of the house where Dr. Knowles Renshaw lived. With his grandfather, Jeremiah Renshaw, who qualified in 1833, and his father, Charles Jeremiah Renshaw, he kept up the succession for nearly 100 years. He received his medical education at Cambridge, Manchester, the London Hospital, and Vienna, and qualified in 1895. After graduating in medicine at Cambridge in 1896 he became house surgeon at the Manchester Royal Infirmary and later went into general practice in his own district of Sale. Gradually, however, he devoted himself more and more to aural and laryngeal work, and in the end he specialised exclusively in it. His chief public work was on the staff of the Manchester Consumption Hospital and of the Crossley Sanatorium. Always friendly and helpful, and certainly without any enemies, Dr. Renshaw leaves a gap which will be hard to fill, and Manchester is the poorer for the loss of his genial presence. The greeting received a few days before his death from Cambridge medical men assembled at their annual dinner gave him special pleasure. He leaves a wife and children.

FREDERICK STEPHEN PALMER, M.D. DURH., F.R.C.P. LOND.

THE death of Dr. F. S. Palmer on April 21st removes a physician of ability whose career was unusual in the profession.

The son of a practitioner at East Sheen, Surrey, Frederick Palmer received his medical education at Westminster Hospital and became M.R.C.S. and L.S.A. as long ago as 1869. After holding the post of house surgeon at Westminster Hospital, he was for four years resident medical officer at the Radcliffe Infirmary, Oxford; having thus equipped himself for his life's work, he settled down at East Sheen like his father before him. Here he carried on for many years a very successful general practice. Amongst his patients were the ex-Royal Family of France, and he was on friendly terms with the late Comte de Paris. In 1885 he graduated as M.D. at the University of Durham, and in 1901, 32 years after qualification, he left his practice in Surrey, settled in London, and successfully sat for the examination for Membership of the Royal College of Phy icians. As clinical assistant at the Hospital for Sick Children, Great Ormond-street, and at the National Hospital, Queen-square, he acquired further experience, and such were his energy and determination that he was able to establish himself as a consulting physician and neurologist. In 1904 he was elected physician to the West End Hospital for Nervous Diseases, where he rendered excellent service for many years both in his clinic and as chairman of the committee of management. He was at the disposal of everyone whom he could help and his skill and sympathy ensured that these were many. During the war his energy and business acumen made him invaluable to the hospital, and it was not until 1921 that he joined the consulting staff, the age of retirement having been postponed for him. For many years Dr. Palmer was also physician to the Hostel of St. Luke and to the Royal Society of Musicians, and his experience found expression in numerous contributions to medical journals. He was president of the West London Medico-Chirurgical Society, and in 1911 his successful work as a consultant led to his election as F.R.C.P. Lond.

The bare record of Dr. Palmer's life is evidence of courage and ability. To his personal charm and character his friends bear witness. "Dr. Palmer was a fine specimen of the courteous Christian gentleman with high ideals," writes a colleague, "and he retained his mental and physical vigour to the end."

Dr. Palmer leaves a wife, and a daughter married to Surgeon-Captain Campbell, R.N. (retd.).

HENRY WICKLIFFE FISHER, L.R.C.P. EDIN.

THE death of Dr. H. W. Fisher on April 20th removes a general practitioner of high reputation in the Sefton Park district of Liverpool. Dr. Fisher was 60 years of age. Educated at University College, Liverpool, he took the conjoint Scottish diplomas in 1889 and settled in Sefton Park some 20 years ago. Early in his medical career he had the misfortune to suffer from serious deafness, but in spite of this affliction he continued undaunted with his work, so that his practice, instead of dwindling because of his disability, continued to increase. Acumen, energy, and devotion combined to make him a very valuable adviser, and those with whom he came into consultation testify to his diagnostic skill. His energy for work was irrepressible. Dr. Fisher was a keen cricketer and took a great interest in the local club. He is survived by his widow and a family of three.

THE LATE DR. D. T. BELDING.—Dr. Davy Turner Belding, who died on April 15th at the age of 62, had been medical officer of health to the East Dereham U.D.C. for the past 30 years. He was a son of the late Mr. Davy Turner Belding, of South Creake Hall. Receiving his medical education at St. Bartholomew's Hospital, he acted as prosector at the Royal College of Surgeons from 1886 to 1887, and qualified as M.R.C.S., L.R.C.P. in the following year. Then he returned to East Dereham and entered into partnership with Dr. H. C. Hastings, whose pupil he had earlier been and to whose practice he ultimately succeeded. During the war Dr. Belding, who was a Territorial officer, acted as A.D.M.S. to the East Anglian division and later served under the Eastern Command, eventually taking rank as brevet lieut.-colonel. He was a keen golfer, being at one time captain of the Royal Norwich Golf Club, and a prominent Freemason. He leaves a widow and daughter.

THE LATE DR. MAXWELL ROSS.—Until the end of last year Dr. James Maxwell Ross, who died on April 10th, was medical officer of health for the county of Dumfries. He was born in Ross-shire 72 years ago and graduated in Arts at the University of Edinburgh in 1876, proceeding to a degree in medicine in 1881. Two years afterwards he became F.R.C.S. Edin. and he also took the degree of B.Sc. in public health. In Edinburgh he acquired considerable experience of aural work and thoroughly qualified himself for his post as a medical officer of health. He was responsible for the sanitary administration of a number of towns and villages besides the county of Dumfries and carried out his duties with tact and sympathy. Dr. Ross's ability and knowledge were recognised by his appointment as examiner in public health to the Royal College of Surgeons of Edinburgh and as a member of one of the consultative councils of the Scottish Board of Health. He was also at one time President of the Society of Medical Officers of Health of Scotland and a member of the Council of the British Medical Association. Dr. Ross's wife died some years ago and his elder son, Dr. Dermid Ross, died in 1920. There is one surviving son.

QUEEN CHARLOTTE'S MATERNITY HOSPITAL.—Sir Samuel Scott, presiding at the annual meeting of governors and subscribers of Queen Charlotte's Maternity Hospital on April 26th, said that there were only 700 beds for maternity patients in the voluntary hospitals of London. More beds were urgently needed at Queen Charlotte's Hospital, which constantly had to refuse applicants owing to lack of accommodation. Last year nearly 2000 patients were admitted to the wards, and the committee was considering the addition of an operating theatre. An interesting fact had recently come to light regarding the foundation of the hospital. Dr. G. C. Peachey had discovered an old manuscript in the British Museum from which it was clear that the hospital was founded in the year 1739 and was thus the oldest maternity hospital in the United Kingdom. The hospital was still in debt to the extent of £9000, and contributions were urgently needed.

Parliamentary Intelligence.

NOTES ON CURRENT TOPICS.

THE MIDWIVES AND MATERNITY HOMES BILL.

THE Midwives and Maternity Homes Bill, a measure introduced by Lieut.-Colonel FREMANTLE and supported by the Government to amend the Midwives Acts, 1902 and 1918, and to provide for the registration of maternity homes and other purposes, was read a third time on April 27th. The Bill had been previously considered by Standing Committee A of the House of Commons, with Sir RICHARD BARNETT in the chair, when important amendments were introduced.

Elimination of the Handy Woman.

Clause 1 provides that the following subsection shall be substituted for Section (2) of Section (1) of the Midwives Act, 1902 (relating to the certification of midwives):—

"Any person not being certified under this Act who attends a woman in childbirth otherwise than under the direction and personal supervision of a duly qualified medical practitioner shall, unless that person satisfies the court that the attention was given in a case of sudden or urgent necessity, be liable on summary conviction to a fine not exceeding £10."

Sir KINGSLEY WOOD (Parliamentary Secretary to the Ministry of Health) moved a drafting amendment to leave out the words "any person not being," and to substitute the words "if any person being either a male person or a woman not." The object, he said, was to make it perfectly clear that there should be no possibility of admitting any man to the Midwives Roll.

Dr. VERNON DAVIES asked how this would affect medical students who, as a part of their training, had to undertake a certain number of midwifery cases on their own and not under the supervision of a doctor from the hospital. In cases of necessity or difficulty such students could send to the hospital for skilled help.

Sir KINGSLEY WOOD said he thought that such students would have to act as they had done hitherto, under the responsibility of the doctor who sent them.

Dr. DAVIES said they could not under this clause, because it said "Under the direction and personal supervision of a duly qualified medical practitioner." It might happen, if the case was a normal one, that a qualified doctor did not see the case from beginning to end.

Sir KINGSLEY WOOD said they could discuss that when they come to the question of "personal supervision," but he wanted to make it clear so far as this part of the Bill was concerned, that they must not in any way, even by implication, suggest that there was anything like a male midwife. There had been certain cases, particularly in the county of Durham, in days gone by, where an undesirable practice had at any rate been in existence, and men had acted in these cases. They wanted to avoid that. He would give further consideration to the question of medical students if necessary.

Colonel FREMANTLE said he thought that the case was perfectly met under the Bill by the words "under the direction and personal supervision of a duly qualified medical practitioner," because in all the medical schools the attendance on women in childbirth was under the direction and supervision of a qualified medical officer of the hospital all through. As the clause was to be amended it would meet the case.

Major HILLS had an amendment on the paper to substitute for "the personal supervision of a duly qualified medical practitioner," the words "in the presence of a duly qualified medical practitioner." As the Chairman ruled that this amendment would be cut out by the passing of Sir K. WOOD's amendment he was allowed to discuss certain points in connexion with it along with the new subsection before the Committee.

Major HILLS said that he objected to the words "personal supervision," as they were too vague, and it might be held that a doctor was in personal supervision of an uncertified woman if he had employed that woman and given her a general direction as to the conduct of the case. It is felt by the Central Midwives Board that these words were too uncertain, and, while it was admitted that in cases of emergency it might be necessary for an uncertified woman to act, it should not be the general practice that she should do so, except in the presence of a duly qualified doctor. He agreed that that proposal raised certain difficulties, one of which was that nobody could say exactly when a birth was going to take place, and it would, of course, make the clause much more stringent. Nevertheless, they wanted to prevent the practice of midwifery by unqualified women, and he was rather afraid that if the clause was left as it was in the Bill that they would admit the unqualified woman midwife. It might be the case that the clause in the Bill would be fulfilled if the doctor telephoned or talked to the uncertified woman.

Colonel FREMANTLE said that on behalf of the Central Midwives Board he had an amendment on the paper which was very similar to that of Major HILLS. He thought that the Midwives Act worked extremely well, but even in his profession there were a few black sheep. There were undoubtedly cases where diehards of the medical profession, who had been used to working with certain handy women, continued to do so within the letter of the law. The question they had to deal with was the exceptions. He had put down a proposal that the handy woman should be allowed to practise only in the case of the personal attendance of the doctor, and that is an amendment which was suggested by the Central Midwives Board and other bodies who worked with them. When they were considering the actual working of this proposal he was asked at what stage in the confinement should the doctor be required. If they said during labour, that lasted sometimes 24 hours, sometimes 36 hours, and even 48 hours, and the doctor, in justice to his other patients, could not be expected to be present the whole time. On the other hand, if they said "actual delivery," then the doctor had to wait and wait. Of course, he had other pressing cases, and while he was away, and before he could get back, often the child was born. One other objection to his proposed amendment was that it would penalise the handy woman for the fault of the doctor. The medical man was the person who should be made primarily responsible in these cases. He would be prepared to withdraw his amendment if he could see that definite steps would be taken to induce the General Medical Council to regard the conduct of a medical man, in deliberately abstaining from being present in the case of childbirth, as infamous conduct. If the General Medical Council would tune up doctors to carry out the letter and spirit of this clause that was all that was required.

Mr. RHYS DAVIES said he was in favour of the amendment, but he failed to understand the meaning of what was stated about men doing midwifery, who were not qualified men. He wished to know how many there were of these unqualified men, and whether it was intended to rule out these men who were acting in confinements and who were not medical men. If so, were there sufficient women to do the work? He would not like to do anything to reduce the number of those who were doing this kind of work, whether they were men or women.

Sir KINGSLEY WOOD said there had been a practice in certain parts of the country, which the Central Midwives Board had expressed themselves very strongly against, of men acting in cases of this kind without any experience or training such as that received by medical students and without any doctor behind them at all. At the back of a medical student there was always some medical man who must take the responsibility, but in the case of these unqualified men that was not the case. One of the reasons why the Government were supporting this Bill was that it was making for the time when unqualified persons, male or female, would be prevented from acting as midwives. But they could not achieve that object all at once, because they had not sufficient women at present to do the work. He thought the proposed new clause was a great step forward. The Act of 1902 simply laid down that—

"From and after April 1st, 1910, no woman shall habitually and for gain attend a woman in childbirth otherwise than under the direction of a qualified medical practitioner."

The words "habitually and for gain," in practice had proved not particularly helpful, and people had been able to avoid the restrictive character of the clause by proving that it was an isolated case and that they were not habitually engaged. The words in the old Act which states simply, "under the direction of a qualified medical practitioner," were really very vague, and it might well be, as had been proved in several cases, that a man by being present simply at the beginning of a case would have strictly complied with the section, and that was the end of his responsibility. The new clause took the matter very much further; and anything about habitually practising was left out and, in order that there should be no quarrel over that particular matter, the clause said, "Under the direction and personal supervision of a duly qualified medical practitioner." He believed those words threw a much greater obligation on the woman who was attending these cases than on the medical man himself. Obviously, if this phrase had to be interpreted in the courts, it really meant taking over the whole responsibility and conduct of the case. It did not simply mean a direction on the telephone, because that might very well have taken place under the Act as it was at present. Personal supervision meant that a medical man had actually to take charge and the woman had to act under him. If they said "In the presence of," it would practically mean that the whole proceedings under this clause would be a dead letter.

It would mean that the doctor would have to be present throughout the whole of the confinement to be absolutely safe, not only during labour, which, unfortunately, sometimes occupied a good deal of time. It was perfectly true that the Central Midwives Board did at one time favour the words "and in the presence of," but it had been pointed out to them where those words would lead them, and he understood that the Central Midwives Board were now content with the clause as on the paper. The Ministry of Health took the same view. Anxious as everyone was to bring about a better state of affairs, one often ruined a reform by going too far. It had been suggested to him that it would be useful if he could see whether the General Medical Council would do something in those cases, which, so far as his knowledge of medical practitioners was concerned, were very rare, where a medical man covered an unqualified woman and allowed her to proceed; and that the mere fact that he did so might be held to comply with this section. He thought that it was far better, as in a case of other professions, if the medical profession could itself bring about the necessary reform in a small number of cases. They might perhaps be able to take action in the case of a medical man who so far forgot his professional duty as to allow a woman to proceed in this way. He would undertake on behalf of the Ministry of Health to consult the General Medical Council to see whether something could be done in that direction.

After further discussion Sir KINGSLEY WOOD's amendment was agreed to, and Clause 1, as amended, was added to the Bill.

Fees to Suspended Midwives and Called-in Practitioners.

Clause 2 of the Bill provides that:—

(1) Where on an appeal to the Central Midwives Board by a midwife who has been suspended from practice by the local supervising authority it is shown to the satisfaction of the Board that the suspension was not due to any default on the part of the midwife, the Board shall (notwithstanding anything in Subsection (2) of Section 6 of the Midwives Act, 1918) direct the local supervising authority to pay to the midwife such sum by way of compensation as, having regard to the circumstances of the case, seems just to the Board, and the local supervising authority shall forthwith make a payment to the midwife in accordance with the direction.

(2) Subsection (2) of Section 14 of the Midwives Act, 1918 (which imposes a condition on the payment of a fee to a medical practitioner called in to assist a midwife in case of emergency), shall have effect as though at the end thereof there were added the words "and shall submit his claim within two months from the date on which he was called in."

(3) Subject to the sanction of the Minister of Health, a local supervising authority may make arrangements with any pregnant women in their area for the payment by such women to the authority, whether by instalments or not, of such sum as may be agreed to cover any liability which the authority may incur under Section 14 of the Midwives Act, 1918, in respect of fees payable to medical practitioners who may be called in by midwives in pursuance of that section, and Subsection (4) of that section shall not apply in the case of any woman who has entered into such an arrangement and has duly paid the agreed sum.

Sir KINGSLEY WOOD moved an amendment to leave out Subsection (1) and insert in its place the following:—

(1) Where a midwife has been suspended from practice in order to prevent the spread of infection she shall, if she was not herself in default, be entitled to recover from the local supervising authority such amount by way of compensation for loss of practice as is reasonable in the circumstances of the case.

In Subsection (2) of Section 6 of the Midwives Act, 1918, the words from "or where" to "infection" shall be repealed.

He said that in the great majority of cases the local supervising authorities had paid this compensation, but there had been a few cases where they had declined to do so. It was obviously unfair that a certain number of midwives should not get any compensation while their colleagues in other parts of the country did receive it. This clause made the matter obligatory and brought about uniformity in practice on this matter. The alteration in the Bill, as drafted, was to bring the Bill into conformity with the original Act, which did not admit of an appeal to the Central Midwives Board.

Dr. VERNON DAVIES said he thought the main idea of the Bill was to prevent the spread of infection. It was not always easy to decide whether a midwife was really at fault or not. It was sometimes extremely difficult to prove and it was worthy of consideration whether they should not leave out the words "that she was not herself in default," and say that all cases which were suspended should receive compensation. A midwife might attend a confinement and it might go wrong and there might be puerperal fever. Possibly—almost certainly—that woman was responsible, but they could not be quite certain. It was held by some authorities that women could get autogenous infection, and in that case they might be penalising the midwife. He said, therefore, that they should pay them all.

Sir KINGSLEY WOOD said he did not quite go so far as that. If the midwife was in default they could not ask a local authority to pay her the money, but if, on the other hand, it was purely due to a spread of infection, his clause secured for the first time that a local authority should be liable to pay such amount of compensation as was reasonable.

The amendment was agreed to, and Clause 2, as amended, was added to the Bill.

The Midwives Roll.

Sir KINGSLEY WOOD moved to leave out Clause 3, which deals with the fee for the retention of names on the roll of midwives.

He said that the clause, as it stood, sought to impose upon the midwives an annual fee of 2*s.* 6*d.* and its real object was to keep the Midwives Roll up to date. There had been a great deal of difficulty about the roll. It had to be published annually and it contained at present some 70,000 names, but there were really only about 14,000 persons actively pursuing their profession. The names of the people who were really engaged in this work were supplied from year to year by the local authorities under whom they were acting, and they were the people who were really doing the work and whose names ought from time to time, at any rate, to be published. One could understand the desire of people who were administering this Act to have the roll kept up to date, and to eliminate, if possible, from it people who had dropped out, and at the same time to avoid expense, but this particular clause on the paper had been rather strongly objected to by a number of midwives who were not perhaps in very flourishing circumstances, and who were not very anxious to pay this half-a-crown every year. Secondly, there was an objection from the administrative point of view, and that was that it would mean a communication to each of these 70,000 persons every year in order to collect the money. Therefore, under the circumstances, they thought that the best way of dealing with the situation would be to have a new clause which the Committee would discuss at a later stage.

The clause was negatived.

Sir KINGSLEY WOOD moved to leave out Clause 4 of the Bill, which, he said, was no longer necessary. The clause was negatived.

Maternity Homes: the Administering Authority.

Clause 5 of the Bill deals with the registration of maternity homes, and provides as follows:—

(1) Any person who on or after the appointed day carries on a maternity home within the meaning of this Act shall, unless that person is registered in respect of that home, be guilty of an offence against this part of this Act, and shall be liable on conviction to a fine not exceeding £50 or, in the case of a second or subsequent offence, to imprisonment not exceeding three months either in lieu of or in addition to any such fine.

(2) Application for registration shall be made to the local supervising authority in writing in the form prescribed by the Minister of Health, and shall be accompanied by a fee of 5*s.* All fees received by a local supervising authority under this section shall be paid into the county fund or the borough fund as the case may be.

(3) Subject as hereinafter provided, the local supervising authority on the receipt of an application for registration shall register the applicant in respect of the maternity home named in the application:

Provided that the authority may refuse to register the applicant if they are satisfied (*a*) that the applicant or any person employed by the applicant at the home is not a fit person, whether by reason of age or otherwise, to carry on or to be employed at a maternity home; or (*b*) that for reasons connected with situation, construction, accommodation, staffing or equipment, the home or any premises used in connexion therewith are not fit to be used for a maternity home, or that the home or the premises are used or to be used for purposes which are in any way improper or undesirable in the case of a maternity home.

Sir D. NEWTON moved an amendment to secure that the councils of non-county boroughs and urban districts should be established as the authority to administer the Midwives and Maternity Homes Bill in their areas. The whole question of the administration and regulation of midwifery and child welfare and the question of registration of maternity homes and matters of that kind was now dealt with under three statutes. There was the Midwives Act of 1902, the Midwives Act of 1918, and the Maternity and Child Welfare Act of 1918. This Bill would, of course, strengthen those Acts which were already on the statute book. The Midwives Acts of 1902 and 1918 were administered by the county council, and originally under the Midwives Act of 1902 the county council was authorised and empowered to delegate its powers to other local authorities within its area, but under the Act of 1918 those powers of delegation were withdrawn in respect of authorities to whom those powers had not then been delegated. As matters now stood there was no power of delegation on the part of the county council or the county borough in regard to these powers under the Midwives Acts of 1902 and 1918, and in regard to maternity and child welfare. Under the provisions of the 1918 Act, the Ministry of Health was definitely

charged with the duty of determining which authority should administer the Act. The Ministry of Health had been given discretionary power to decide whether the Act should be administered through the county council or through a non-county borough council, or an urban district council. He understood that already through the exercise of these powers the Ministry of Health had authorised no less than 261 borough councils and non-county boroughs and rural and urban district authorities to carry out the provisions of the Maternity and Child Welfare Act. That was to say, within the area of 43 county councils the Ministry of Health had authorised 261 other councils to administer the Maternity and Child Welfare Act. He thought that indicated clearly that the view of many county councils was that the question of maternity and child welfare could best be administered by non-county boroughs and urban and rural district councils. It might be that there was a fear of overlapping, because even now there was a certain amount of it in regard to midwifery and the administration of child welfare and maternity laws. In urging that these powers under this Bill should be given to non-county boroughs in cases where they already administered the Maternity and Child Welfare Act he would like to point out that this question was one which was interlocked with the general question of health administration. These authorities were well qualified and well fitted to carry out the duties which would arise under this Bill. The registration of these homes was not really just a formal matter, but a matter which needed to be very carefully carried out. The registering authority had to see that the applicant was a fit and proper person to carry on a home, and here again he suggested that the local authority, fully conversant with all the local conditions, was the most sympathetic and the most suitable body to hear the applicant and to consider her side of the case. It was clear that the enforcement of by-laws dealing with the question could really be dealt with best by the local authorities on the spot, rather than by the major body, the county council.

Sir KINGSLEY WOOD, in opposing the amendment, said that the local supervising authorities under the Midwives Acts were the county councils and the county borough councils. For the first time they were proposing that there should be registration of maternity homes—a reform which Members of all parties had long desired and which he hoped we should be able to secure as a result of this Bill. Part 2 of the Bill said that the registration should be made by the local supervising authority, and under the terms of the measure, as at present drafted, the supervising authorities had very important duties to perform. They had to see that the applicant, or any person employed by the applicant at the home was a fit person, and they had to inspect and see that the situation, construction, accommodation, staffing—he particularly emphasised the word staffing—and equipment of the home was right and proper, so that people who went there should receive proper treatment. Obviously while he did not wish for a moment to minimise the work which had been done by the minor authorities of the country in regard to maternity and child welfare work, the people who must administer the registration of these homes, and carry out the supervision of them, were the very people who were acting under Part 1 and supervised the midwives of the country. They had already got under the county councils and the county borough councils the necessary machinery for the purpose. The Minister of Health attached the greatest importance to this amendment being defeated. He regarded this as a critical clause in the Bill, and the Government could not say how far they would be able to support the measure if this clause was carried. In 1918 the legislature actually took away from the authorities the power to delegate which was given them in 1902. This was done because the power of delegation had not been generally exercised, and in a few cases in which it had taken place it acted detrimentally to the administration of the Act and introduced elements of confusion and uncertainty. In conclusion, he was authorised to say to the Committee that the Central Midwives Board, who ought to know all about this work and who had long been anxious for this reform and who had had more experience than any people in this country of this work, and who were an impartial-minded Board, were very anxious that the provisions in this Bill as it appeared before the Committee should be maintained and that this further element of other local authorities should not be introduced because they believed that it would not only be more wasteful, but that it would introduce elements of confusion and uncertainty into the administration. For all these reasons he thought the Committee would be well advised to negative the amendment.

MR. TREVELYAN THOMSON said the amendment had been put down on behalf of the Municipal Corporations Association and the District Councils' Association, and they were disappointed at the attitude of the Parliamentary Secretary to the Ministry of Health. There was bound to be a certain amount of overlapping whatever procedure was followed. There were 261 local authorities which had maternity and child welfare committees. What was their position if they had maternity hospitals? They would then have two authorities controlling maternity hospitals in one area. That would produce not only inefficiency, but extra cost. Surely the Maternity and Child Welfare Act had shown that the local authorities had efficiently administered its provisions, and as maternity homes were so closely connected with infant welfare, surely the two matters should be under one authority.

MR. ARTHUR GREENWOOD said that he thought those who supported the amendment were under a misapprehension. Clause 5 really ought to be read in connexion with Clause 10 because the latter clause laid down perfectly clearly that the expression "maternity homes" in the Bill did not include hospitals or other premises maintained by local authorities. These proposals rather applied to those areas and local authorities which up to the present had not been sufficiently progressive to have their own maternity homes. He could not find it in his heart to have very much sympathy with them, and he was not at all sure that they should not be superseded by some larger authority. He suggested that the difficulty might be met by including authorities over a certain size. He should like to know (1) whether local authorities which now controlled maternity homes would not really be affected; and (2) whether they could extend their maternity homes provision and remain outside the scope of the Bill? If that were so he thought they had reduced the problem to very small dimensions.

Captain MACMILLAN said if the Government would give a guarantee that they would resist any amendments to Clause 10, when that stage was reached, which would tend to take away the rights of the local authorities for whom he was speaking—the larger boroughs without county borough powers—then, although he was in favour of the general principle of the amendment, he would be prepared to accept the Bill as it stood.

Major HILLS said that he had always favoured the larger authority and had intended to vote against the amendment, but he had been struck with the speeches of Captain MACMILLAN and Mr. GREENWOOD, who had pointed out that Clause 10, as drawn, would give a reasonable compromise between those who supported the county council and those who supported the non-county borough. As he read that clause it did allow progressive non-county boroughs to start their own maternity homes, and, if they did so, those homes would be under the non-county borough councils and not under the county councils. If it would ease the situation, he would be prepared not to move his amendment to Clause 10, which provided for the approval of the county council of the staff and equipment of a hospital in a non-county borough. Of course, the bigger question must be threshed out at some future time in connexion with the Poor-law, or some question of that sort, when they must come to some general allocation of the powers of different local authorities. As far, however, as this Bill was concerned, he thought that Clause 10 did what was required, and all that was necessary was that the Parliamentary Secretary to the Ministry of Health should assure them that their interpretation of Clause 10 was correct.

Mr. BASIL PETO said that the smaller local authorities had admittedly carried out the duties entrusted to them in 1918 satisfactorily and efficiently, and if Parliament now put over them an over-riding authority in respect of one particular matter they would tend to kill that ambition for public service by local authorities. He unhesitatingly supported the amendment.

Colonel FREMANTLE said they wanted to get at the mischief where it started, that was the bad midwife—there were not many of them now—or the thoughtless, perhaps kind-hearted, midwife, who took into her spare room a single girl in order to see her through her trouble. Eventually she might get two or three such women into her home, and that was the sort of maternity home where all sorts of things went wrong, and there was shocking loss of life. He would give two instances which were brought to him from the south and north of England. Here was one from the south, a case illustrating the importance of registration and inspection of maternity homes:—

> "A practising midwife lives in a small house, three bedrooms upstairs, two sitting-rooms and kitchen downstairs. She took in three maternity cases and in addition to these there were three adults and two children in the house. One child had a septic condition of the face. Here there existed overcrowding and a septic focus—result two cases of puerperal infection. The registration and inspection of maternity homes must apply to cases of this kind."

Who was the person who knew that home? It was the inspector of midwives, who was keeping under review every midwife on the roll. Let him give the other instance from the north of England. A midwife in that area was taking women into her house to be confined, and on one occasion she had as many as three persons at the same

time. Following on the line of this midwife another one had now commenced the same practice and had already had several confinements in her house. From having had experience for 12 years of administering the Midwives Act, he knew the women who were working as midwives. It was the midwives who were starting this practice, and they were the women they wanted to get at. He was certain that everyone who had had experience of administration would say that the authority to administer the Midwives Act must be the authority who could get at these bad maternity homes when they were first started. That was the real danger. He quite saw the point which had been raised on behalf of the boroughs. He thought that Major HILLS had put in a very statesman-like way the difficulty of reconciling the rival authorities. He hoped they might have a compromise on this matter, because the Bill was a compromise. Before long they must get a rearrangement of the respective powers exercised by the county authority and the non-county authority in other measures which would come before the House. He appealed to the Committee on behalf of all those people who knew the wicked maternal mortality which was going on, and which it was the object of the Bill to prevent.

Mr. RHYS DAVIES said that he was rather inclined to the view that if they were to get information about these malpractices such information would travel to the officers of the local authorities before it would travel to the county council offices. Consequently he was almost inclined to vote for the amendment.

Sir KINGSLEY WOOD said it was not so much a question that maternity and child welfare work was analogous to the registration and inspection of these homes. He would be the last to interfere with the excellent work which was now going on in that direction, but the real analogy was the registration and supervision of midwives. Every midwife in the country had not only to be registered by the county council or county borough council, but had continually to be under supervision, and it seemed to him a great waste of time and money that when they had the power already in the hands of the larger authorities they should now turn round and say that the minor authorities should be responsible, although they had not the facilities for doing maternity and child welfare work as efficiently as the larger authorities, inasmuch as they had not the officers who could go round and inspect the homes. There were 312 maternity and child welfare authorities who were neither county nor county borough councils. Of that number only 29 had provided their own maternity homes. As regarded voluntary maternity homes used by maternity and child welfare authorities, he found that only 52 of the 312 authorities made use of maternity homes situated in their districts. These facts by no means minimised the importance of the work of maternity and child welfare, but they had a most material bearing when they came to decide which authority should carry on the work. The clauses of the Bill represented a very fair compromise. In Clause 10 it was provided that the expression "maternity home" should not include "any hospital or other premises maintained or controlled by a Government department or local authority . . ." By that means they amply safeguarded not only the homes at present established by these other authorities, but any future homes that might be established. He hoped the Committee would support the Bill as it stood.

The amendment was rejected by 25 votes to 8, and Clause 5, as amended, was then agreed to.

Cancellation of Registration.

Clause 6 (cancellation of registration) was agreed to.

On Clause 7 (which deals with notices of refusal or cancellation of registration) several amendments were taken.

Colonel FREMANTLE moved an amendment providing that not less than 14 days' notice should be given to the applicant or the person registered by the supervising authority of their intention to make an order under the clause.

The amendment was agreed to.

A further amendment was agreed to giving the applicant or person 14 days from the receipt of the notice to show cause why the order should not be made.

Colonel FREMANTLE moved an amendment providing that any person aggrieved by an order made under the clause might appeal against it to Quarter Sessions as well as a court of summary jurisdiction.

The amendment was agreed to.

Keeping of Records.

Clause 8 deals with the power of the supervising authority to make by-laws.

Colonel FREMANTLE moved an amendment providing that by-laws could be made with respect to records to be kept of patients received into and children born in a maternity home, and of children so born who were removed from the home otherwise than to the custody or care of any parent, guardian, or relative. He said the object of the amendment was to get at the root of certain cases of baby-farming.

The amendment was agreed to.

Notification of Deaths.

Colonel FREMANTLE moved an amendment providing that by-laws might be made as to the notification of any death in a maternity home and the cause thereof.

Major-General Sir R. LUCE asked if this was not a very difficult question, and ought they not to have some explanation in regard to the certificate of the cause of death? After all, there was only one legal certificate of the cause of death, and a different cause of death might be given here. It did not say who was to be responsible for certifying the cause of death.

Sir KINGSLEY WOOD said that his department had given consideration to this amendment, and they thought that on the whole it was a desirable thing to include. At the present moment only the actual death itself had to be recorded, but he did not think that there would be any difficulty, and it would be a help to those people who desired to see progress in public health to know exactly what the cause of death was. The great majority of these homes were under medical supervision, and he did not think it would cause any difficulty that the cause of death should appear in these records.

After further discussion,

Sir KINGSLEY WOOD suggested that the amendment should not be pressed that day and they would consider later whether it was necessary.

Sir R. LUCE said his point was that they should be quite sure that the exact cause of death was given.

Sir KINGSLEY WOOD: That can be provided for in the by-laws.

The amendment was agreed to.

A further amendment was passed, striking out a provision that by-laws might be made "generally with respect to the conduct of maternity homes and for carrying into effect this part of the Act."

The clause, as amended, was added to the Bill.

Clause 9 (offences by companies) was agreed to.

Interpretation.

Clause 10 (interpretation) reads as follows:—

In this Act unless the context otherwise requires: The expressions "register" and "registration" mean register and registration under Part II. of this Act; the expression "appointed day" means the first day of January, 1927; the expression "maternity home" means any premises used or intended to be used for the reception of pregnant women or of women immediately after childbirth, but shall not include (*a*) any hospital or other premises maintained or controlled by a Government department or local authority, or by any other body of persons constituted by Parliament or incorporated by Royal Charter; or (*b*) any hospital or other premises for the conduct of which a duly qualified medical practitioner resident therein is responsible; or (*c*) any premises used for the training of persons as midwives, which are approved for that purpose by the Central Midwives Board; the expression "offence against this Part of this Act" includes an offence against any by-laws made under Part II. of this Act.

Sir KINGSLEY WOOD moved to leave out paragraph (*c*) and to insert instead the following:—

"(*c*) any hospital or institution not carried on for profit and not used mainly as a maternity home which may be exempted from the provisions of Part II. of this Act by the local supervising authority."

He said it had been represented to his department that there were, up and down the country, a large number of small cottage hospitals which had no resident doctor, but were staffed with local doctors, who continued to attend their own patients who might happen to be in the hospital. These small hospitals did not strictly come within the definitions which preceded this paragraph, and he thought they should be exempted if the local supervising authority were satisfied that they were conducted on the lines indicated. The amendment was intended to meet the wishes of the medical men in question, who were, no doubt, doing very useful work.

Dr. DAVIES asked if "not carried on for profit" meant that if a medical man sent patients to a cottage hospital he would not be allowed to charge fees.

Sir KINGSLEY WOOD: He will certainly be allowed to charge for his own patients. It only means the home itself.

The amendment was agreed to, and the clause, as amended, was agreed to.

New Clauses: The Midwives Roll.

Sir KINGSLEY WOOD moved the following new clause:—

(1) The Central Midwives Board may, if they think fit, cause the roll of midwives to be divided into two parts, of which one shall contain the names of all those practising midwives whose names have been supplied to the Board by local supervising authorities in the month of January in each year, in accordance with the provisions of Section 8 of the Midwives Act, 1902, and

shall be published annually, and the other shall contain the names of all other persons who are entitled to be on the roll, and shall be published at such intervals, not exceeding five years, as the Minister of Health may approve.

(2) The Central Midwives Board may from time to time by registered letter addressed to any woman whose name is included in the roll of midwives at her address as appearing therein, inquire of her whether she has ceased practice or has changed her residence; and if within a period of six months from the sending of such a latter no answer is received thereto, the Board may erase the name of that person from the roll, and may cancel her certificate, but without prejudice to the power of the Board subsequently to restore the name to the roll and to re-issue the certificate if it appears proper so to do.

The clause was read a second time and added to the Bill.

Access to Premises.

Colonel FREMANTLE moved the following new clause:—

(1) An officer duly authorised by the local supervising authority may, subject to such regulations as may be made by the authority, at all reasonable times enter and inspect any premises which are used, or which that officer has reasonable cause to believe to be used, for the purposes of a maternity home, and to inspect any records required to be kept in accordance with the provisions of this part of this Act.

(2) If any person refuses to allow any such officer to enter or inspect the premises, or obstructs any such officer in the execution of his duty under this section, he shall be guilty of an offence against this part of this Act, and shall be liable, on summary conviction, to a fine not exceeding £5, together with, in the case of a continuing offence, a fine not exceeding £2 in respect of each day on which the offence continues after the date of conviction.

The clause was read a second time and added to the Bill.

Wearing of Badges.

Colonel FREMANTLE moved a new clause providing that the power of the Central Midwives Board to frame rules under the Midwives Act, 1902, should include a power to frame a rule as to the wearing of badges by certified midwives. If a midwife is removed from the roll she must surrender the badge as well as her certificate.

The clause was read a second time and added to the Bill.

The committee stage was concluded and the Bill was ordered to be reported to the House.

THE ECONOMY BILL.

On Thursday, April 22nd, Sir KINGSLEY WOOD moved the third reading of the Economy (Miscellaneous Provisions) Bill. After discussion, in the course of which important amendments proposed by Dr. DRUMMOND SHIELS, Dr. HADEN GUEST, and others were rejected, the third reading of the Bill was carried by 328 votes to 138—Government majority 190.

SMOKE ABATEMENT BILL.

In the House of Lords on Thursday, April 22nd, the Public Health (Smoke Abatement) Bill passed through Committee.

THE BUDGET.

Mr. CHURCHILL (Chancellor of the Exchequer) introduced his second Budget in the House of Commons on Monday, April 26th. He announced that he proposed to transfer £7,000,000 to the Exchequer from the surplus of £19,000,000 which had accumulated in the Road Fund, and to take a proportion of the revenue of the Fund which is estimated this year to amount to £3,500,000. A duty of 5 per cent. from Nov. 1st next is to be imposed on legal bets made with bookmakers; a duty of £10 on certificates to be taken out by bookmakers; and a duty of £10 on the registration of each set of premises used by a bookmaker for receiving bets on credit. Relief is to be given for bets laid off, and for bets which for any reason are void. The credit period to brewers for payment of excise duty is to be reduced from three to two months. The three years average for the assessment of income-tax under Schedule D is to be abolished in accordance with the recommendations of the Royal Commission on Income-tax, which sat a number of years ago. The new basis of assessment is to be the income of the preceding year. This provision will come into operation in 1927. A duty on imports of wrapping paper at the rate of 16⅔ per cent. *ad valorem* is to be imposed from May 1st. A preference rebate of one-third of the duty will be allowed on Empire goods. The excise duty on home-grown chicory is repealed. It is proposed that the key industries duty of 33⅓ per cent. *ad valorem* is to continue for a further ten years, except that the rate on optical glass and instruments is to be 50 per cent. *ad valorem*, and the rate on arc lamp carbons 1s. per lb. The duties on hackney motor vehicles are to be made uniform in all districts, chiefly at the higher Metropolitan scale up to those seating 40 persons. There is to be a considerable increase on the heavier vehicles. Commercial goods vehicles of one to two tons and upwards, and tractors and road locomotives of from two to four tons and upwards are to pay higher duties. Vehicles in the last category used for agricultural haulage are not affected. Owing to the difficulties of substituting a motor spirit tax for the present motor licence duties, proposals cannot be made in the present Budget, but Mr. Churchill hopes to make the change in the lifetime of the present Parliament. Customs duties are extended to commercial motor vehicles. A new series of options are to be offered to holders of Savings Certificates of the first issue. It is not proposed to renew the Trade Facilities Act. Dumping is to be stopped by making the new duties on commodities apply from the day of introduction. The principle of a ten years' guarantee is to be extended to all the articles now enjoying Imperial preference.

HOUSE OF COMMONS

THURSDAY, APRIL 22ND.

Qualifications of Vivisection Inspectors.

Mr. FENBY asked the Home Secretary if the inspectors under the Cruelty to Animals Act, 1876, were qualified veterinary surgeons and, if not, what special qualifications were required, if any, for the position.—Sir WILLIAM JOYNSON-HICKS replied: The answer to the first part of the question is in the negative. As to the second part, the majority of the Royal Commission on Vivisection in their report expressed the decided opinion that "it is essential that the inspectors should be qualified medical men of such position as to secure the confidence both of their own profession and of the public," and the qualifications which have been required in making these appointments are medical knowledge and standing, and such scientific attainments as would qualify their possessor to appreciate the nature and results of recent scientific research.

Sexual Offences against Young Persons.

Mr. RADFORD asked the Home Secretary whether he was aware that in the recent case of a man who was sentenced to nine months' imprisonment for offences against his daughter aged 14 years, who had now been permanently removed from his control, the court was unable owing to the present state of the law to make a similar order with regard to a younger daughter aged 8 years; and would he consider the desirability of proposing the necessary amendments of the law to meet such cases.—Sir W. JOYNSON-HICKS replied: As I informed my hon. friend last Tuesday, adequate steps have been taken for the protection of the younger daughter. I am aware of the defect in the law to which attention was drawn by the Committee on Sexual Offences against Young Persons (see especially para. 99 of their report). I understand that the Committee on Young Offenders and Neglected Children is likely to propose a number of amendments to the Children Act, 1908, and I will consider the whole matter when their report is received.

Care and Education of Defective Children.

Mr. BRIANT asked the President of the Board of Education the number of schemes for the care and education of defective children which have been submitted to the Board of Education up to March 31st, how many education authorities which were not provided in this respect had failed to submit schemes; and if any steps had been taken to impress them with the necessity of adequate provision for this class of children.—Lord E. PERCY replied: Since the issue of Circular 1349 I have received communications from 225 local authorities, of whom 169 have submitted proposals for making further provision for defective children or have stated that they have the question under consideration. Of the five authorities who made no provision for such children in 1925, three propose to make some provision this year. Authorities' programmes for 1927–30 under Circular 1358 are now being received and examined, but the examination has not yet proceeded far enough to enable me to give information as to their contents.

Amalgamation of Common Services.

Mr. ROBERT HUDSON asked the Prime Minister whether he could inform the House if he was prepared to publish the report of the committee set up, under the chairmanship of Sir Alfred Mond, to consider and report on the amalgamation of services common to the Army, Navy, and Air Force.—Mr. BALDWIN replied: After careful consideration we have decided as a special case to issue the report of Lord Weir's Committee on the amalgamation of services common to the Navy, Army, and Air Force. This report and the reports of the Committee of Imperial Defence published in 1924 (Cmd. 2029), provide the basis of our existing system of coördination, and their conclusions have not been impugned on matters of principle by any subsequent inquiry. We do not think it necessary, or in the public interest, to publish any other report. The minutes of evidence of these inquiries, each of which occupied many months, are very voluminous, and it would not be in the public interest to publish them, but the detailed reports of a number of subcommittees will be published with the main report of Lord Weir's Committee.

Town-planning Schemes.

Mr. TREVELYAN THOMSON asked the Minister of Health how many local authorities had put in hand town-planning schemes under the Housing and Town-planning Act of 1919, and how many local authorities had done nothing in the matter.—Mr. NEVILLE CHAMBERLAIN replied: 273 urban authorities and 51 rural district councils have prepared or are preparing town-planning schemes for the whole or parts of their districts or neighbouring districts. The number of boroughs and urban districts in which, so far as I am aware, no steps have been taken for the preparation of schemes is 825 and the number of rural districts 543. It must not be assumed, however, that all these districts include land for which town-planning schemes should be prepared.

MONDAY, APRIL 26TH.

Chief Medical Officer for the Colonial Office.

Captain CROOKSHANK asked the Secretary of State for the Colonies what were the functions of the recently appointed chief medical officer in his department; and whether this was a new permanent appointment or merely a re-allocation of duties.—Mr. AMERY replied: The post to which my hon. and gallant friend no doubt refers is that of chief medical adviser, whose functions, as the title indicates, will be to advise me generally on all medical and sanitary matters arising in connexion with the Colonies and Protectorates, including measures to ensure continuity of policy and coördination of progressive action between different administrations. The post is a new appointment, the creation of which has been authorised in the first instance for a period of three years.

In reply to supplementary questions, Mr. AMERY said this was a whole-time appointment, and the salary was £1500 a year. The officer would be in close touch with the Medical Advisory Committee. The appointment was one which the Secretary of State made on his discretion after carefully considering the merits of the different candidates.

Salaries of Regional Medical Officers.

Colonel WOODCOCK asked the Minister of Health how many regional medical officers were now employed and how many were similarly employed in 1918; what salaries they received and what were their duties; and whether they were entitled to pensions and at what rate.—Sir KINGSLEY WOOD replied: There were no regional medical officers employed in 1918. The present number of salaries of officers on this staff are: 4 divisional medical officers at £1600; 17 regional medical officers at £1400; and 16 regional medical officers at £1000, rising by £50 to £1400; 13 deputy regional medical officers at £800, rising by £30 to £1100. These salaries are all inclusive of bonus, and the posts are pensionable except for those officers who entered the service at 50 or over (21 in number). The duties are concerned chiefly with the Insurance Medical Service, and National Health Insurance Funds bear the appropriate share of their emoluments. The officers act as medical referees regarding the incapacity of insured persons for work and as consultants in giving second opinions in questions of diagnosis. In addition, they are required to carry out certain inspections under the Dangerous Drugs Act, 1920, and the Blind Persons Act, 1920, and, as needed, to inspect Poor-law institutions.

TUESDAY, APRIL 27TH.

Day and Night Telephone Call Offices in Villages.

Rear-Admiral BEAMISH asked the Postmaster-General if his department was in process of providing public telephone call offices available for day and night service in the villages; whether any such call offices had been established and, if so, where; and, if not, would he state what the prospects were for providing these modern necessities; and whether there were any difficulties.—Sir W. MITCHELL-THOMSON replied: Rural telephone call offices installed in local post-offices are normally available only during the hours when the post-office is open; but urgent calls can generally be made at other hours upon payment of a disturbance fee, if there is a responsible person on the premises. Such calls are rare, and to provide villages with kiosks available for night service would in most cases involve expense out of all proportion to the use made of the facilities. A kiosk can, however, often be provided if the annual deficit is guaranteed by persons interested. A list of villages where day and night telephone service is provided is not readily available.

The Spahlinger Treatment.

Mr. BRIANT asked the Minister of Health if any steps were being taken to make further investigation, if this was necessary, into the results obtained in the cure of phthisis by the Spahlinger treatment; and, in view of the importance of the question to the health of the community, if Government assistance would be given in order to make it available to the large number of persons suffering from this disease.—Sir KINGSLEY WOOD replied: My right hon. friend has offered to send competent medical inspectors to study M. Spahlinger's work at Geneva, and to facilitate scientific investigation in this country if M. Spahlinger will supply his materials and method of use, but up to the present neither invitation has been accepted. The second part of the question does not, therefore, arise.

Dr. VERNON DAVIES asked if it was not the fact that M. Spahlinger has not got the necessary money.

Sir KINGSLEY WOOD replied that that might be so, but directly the Ministry received the necessary information and materials they would be glad to go into the matter.

Mr. T. JONES inquired if the Ministry of Health did not possess a certain amount of discretionary power to give financial assistance in such a case. Was the hon. gentleman not aware of the fact that a large number of trade-unions had already contributed substantially in order to try to make this work a success?

Sir KINGSLEY WOOD: No. I think the right course has been taken in this case—namely, to offer to send our officers to Geneva to study these cases or to ask, on the other hand, that this gentleman should send the material here when we shall be glad to investigate it.

Mr. CLYNES asked if these offers of investigations had been made quite recently.

Sir KINGSLEY WOOD replied in the affirmative. They had been made repeatedly during the last three years.

Medical News.

UNIVERSITY OF CAMBRIDGE.—At recent examinations the following candidates were successful:—

DIPLOMA IN MEDICAL RADIOLOGY AND ELECTROLOGY.

Part I., Physics and Electrotechnics.—Gilbert B. Bush, Arthur E. I. Connolly, Austin C. Dixon, William C. Douglass, William R. Dupré, Henry H. Elliot, Mollie Fisher, Margery Freeborough, Raymond B. Gorst, Alan R. Laurie, David P. Levack, Hendrik J. Louw, Peter J. McKenna, Charles W. McKenny, Elsie J. Mann, Robert R. Morrison, Frederick G. Nicholas, Rees Phillips, John O. Priestley, James Raffan, Francis L. Rayner, Ffrangcon Roberts, Solomon J. Rom, Frederic G. Rose, Albert C. Rusack, Satis Chandra Sen, James O. P. Smith, Henry T. Stack, John G. Stephens, Mary L. Stewart, Charles F. O. White, and Harry M. Worth.

Part II., Radiology and Electrology.—Gilbert B. Bush, William C. Douglass, William R. Dupré, Raymond B. Gorst, Pam Harumal Jhangiani, Alan R. Laurie, David P. Levack, Charles W. McKenny, Elsie J. Mann, Robert R. Morrison, Frederick G. Nicholas, John O. Priestley, James Raffan, Ffrangcon Roberts, Satis Chandra Sen, and Harry M. Worth.

SOCIETY OF APOTHECARIES OF LONDON.—At recent examinations the following candidates passed in the undermentioned subjects:—

Surgery.—N. H. C. Allen, Guy's Hosp.; G. H. Bickmore, Charing Cross Hosp.; S. B. Browning, Guy's Hosp.; S. E. Hymans De Tiel (Sect. I.), Royal Free Hosp.; C. H. St. Johnston, Birmingham; J. B. Lurie, St. Thomas's Hosp.; P. H. L. Moore, St. George's Hosp.; T. C. Pain, Guy's Hosp.; and E. H. Rampling, St. Thomas's Hosp.

Medicine.—C. B. Ball, Sheffield; C. F. L. Haszard, McGill; A. C. Hill, Liverpool; J. L. Hopkins, Guy's Hosp.; D. P. Mitra, Charing Cross Hosp.; M. N. Nicolson and M. Pettigrew, Sheffield; W. H. D. Priest, King's Coll. Hosp.; J. B. Scarr, Manchester; J. Shibko, Cardiff; A. D. Shubsachs, Manchester; and J. W. Whitney, London Hosp.

Forensic Medicine.—G. H. Bickmore, Charing Cross Hosp.; W. O. R. Fischer, St. Thomas's Hosp.; C. F. L. Haszard, McGill; J. L. Hopkins, Guy's Hosp.; D. P. Mitra, Charing Cross Hosp.; M. N. Nicolson, Sheffield; W. H. D. Priest, King's Coll. Hosp.; and J. B. Scarr and A. D. Shubsachs, Manchester.

Midwifery.—L. G. Apps, London Hosp.; K. Girgis, Manchester and Charing Cross Hosp.; J. E. Howard, St. Mary's Hosp.; and L. Schapera, London Hosp.

The Diploma of the Society was granted to the following candidates entitling them to practise medicine, surgery, and midwifery: G. H. Bickmore, A. C. Hill, J. L. Hopkins, C. H. St. Johnston, D. P. Mitra, W. D. H. Priest, E. H. Rampling, J. Shibko, and J. W. Whitney.

UNIVERSITY OF GLASGOW.—At the graduation ceremony held on April 24th the following awards were made:—

The Captain H. S. Ranken, V.C., Memorial Prize in Pathology to William A. Mackey; the Bellahouston Gold Medal for eminent merit in thesis for M.D. to Hugh S. D. Garven; the Straits Settlements Gold Medal for thesis for M.D. on a subject connected with Tropical Medicine or Tropical Hygiene to Walter Telfer; the Macleod Gold Medal in Surgery to Edward Collier; and the Asher Asher Gold Medal in Laryngology and Rhinology to William A. Mackey.

The following degrees have also been conferred:—

M.D.—With honours: John Glaister and Donald M'Intyre. Ordinary degree: Percy Bellwood Farrar.

M.B., Ch.B.—With honours: William Scobie and Ronald Guthrie Lendrum. With commendation: Anna M. Robertson, John Chalmers, Olive C. H. C. MacRae, Abraham Mellick, William A. Lochhead, Agnes Moncrieff, Stuart I. A. Laidlaw, Archibald Hanton, James Campbell, and Marion W. Gray.

Ordinary degree: William Allan, James Anderson, May Anderson, William Anderson, Roderick D. G. Balfour, David K. Ballingall, Frank C. M. Bamford, Arthur F. Beaton, William Beattie, Andrew Bernard, George G. Blair, William S. Boyle, James Brown, Joseph S. Brown, Katharine R. Brown, Winifred Buchanan, Hutchison Burt, Ada M. Cameron, Rina B. Campbell, David P. Cuthbertson, John Denholm, Mary E. Devine, Alexander S. Dick, Henry A. A. Doherty, James Durie, Thomas C. Findlay, William H. Fletcher, Findlay J. Ford, Robert S. France, James A. Fraser, James Fryer, Charles S. Garrett, Norman C. Gellatly, Elizabeth H. Gemmell, Robert G. Gemmell, Ernest W. Grahame, Robert C. Grieve, Mary A. Griffin, Walter Haddow, Robert Hall, Leslie E. Hamilton, Margaret C. P. Hamilton, William C. Harris, Constance E. M. Herbertson, Alexander D. Hutchison, John Innes, Philip G. E. Jolley, Robert S. Kerr; David Kilpatrick, James L. Kydd, James S. Laurie, David D. Lawson, William H. Lindsay, Miriam K. M'Allum, Alastair M'Cracken, James N. M'Cully, Donald Macdonald, George Mackendrick, William M'Lelland, Andrew A. MacManus, Alexander M. M'Murray, William G. M'Naughton, Ian H. M'Neil, Thomas G. H. Martin, Victor C. Meyer, Robert B. Miller, Thomas M'C. Montford, James Morrison, William A. Murray, Mary M. E. Mycroft, Agnes S. Nutt, Thomas S. O'Neill, Dugald C. Orr, James S. Orr, David Prentice, Malcolm S. Purvis, Florence Read, Catherine Ross, James Sharpe, William Shirkey, Alan F. Shirras, Thomas Sim, John Stewart, James H. Thomson, Archibald Walker, Janet B. C. Waugh, William Whitelaw, Helen M. Wightman, William Wilkie, and Edward A. Wilson.

ROYAL COLLEGE OF PHYSICIANS OF LONDON.—Prof. Hugh MacLean will deliver the Oliver-Sharpey lectures on Tuesday, May 4th, and Thursday, May 6th, at 5 P.M., at the College, Pall Mall East. The subject will be Carbohydrate Metabolism in Health and Disease, and any member of the medical profession will be admitted on presentation of a visiting card.

NATIONAL HOSPITAL FOR DISEASES OF THE HEART.—A two weeks' special course in cardiology will begin on Monday, July 5th, instead of Monday, July 12th, as previously arranged.

SOCIETY OF MEDICAL OFFICERS OF HEALTH.—A meeting of the School Medical Group will be held at 1, Upper Montague-street, Russell-square, London, W.C., on Saturday, May 1st, at 3 P.M., when Dr. Edgar H. Wilkins, now an assistant school medical officer at Birmingham and formerly Director of School Hygiene, New Zealand Public Health Department, will read a paper on School Medical Work in New Zealand. The meeting will be open to all members of the society and to others interested in school medical work.

INTERNATIONAL PHYSIOLOGICAL CONGRESS.—The Twelfth Congress will be held in Stockholm from August 3rd to 6th. Intending members are asked to forward without delay their names and addresses, together with the amount of their subscription (20 Swedish crowns), to the secretary, Dr. G. Liljestrand, Karolinska Institutet, Stockholm, Sweden, from whom full information can be obtained. An excursion through the north of Sweden and Norway and other smaller trips will start immediately after the congress if a sufficient number of members give notice of their intention to take part.

FELLOWSHIP OF MEDICINE AND POST-GRADUATE MEDICAL ASSOCIATION.—On Wednesday, May 5th, at 2 P.M., Mr. L. E. C. Norbury will give a special afternoon demonstration at St. Mark's Hospital for Diseases of the Rectum, to which all members of the medical profession are invited. On May 3rd the Royal Waterloo Hospital will begin a three weeks' course in Diseases of Women and Children. There will also be an intensive course beginning on the same date at the Central London Throat, Nose and Ear Hospital. This will last until May 22nd and is divided into clinical and operative parts, which may be taken separately if desired. The Maudsley Hospital will provide a series of lectures and demonstrations on psychological medicine throughout the month. The Royal Westminster Ophthalmic Hospital will hold a course in ophthalmology from May 3rd to 22nd. Another course continuing throughout the month is one in venereal diseases held at the London Lock Hospital; this includes clinical demonstrations and formal lectures. Dr. Eric Pritchard will hold an afternoon course at the Infants Hospital from May 9th to 22nd. There will be an intensive course in medicine, surgery, and the specialties at the Royal Northern Hospital from May 31st to June 12th. Other courses will be given in June on diseases of children, bacteriology, diseases of the chest, gynæcology, urology. There will also be a general practitioners' course. Copies of all syllabuses, of the General Course programme, and of the *Post-Graduate Medical Journal* may be had on application to the Secretary of the Fellowship, at 1, Wimpole-street, London, W. 1.

ROYAL INSTITUTION.—Prof. Joseph Barcroft will lecture on the Lungs on Tuesday, May 4th, at 5.15 P.M.

NATIONAL ASSOCIATION FOR THE PREVENTION OF TUBERCULOSIS.—The Prince of Wales will preside on Friday, July 16th, at a dinner in aid of the Association's funds.

MIDDLESEX HOSPITAL.—In 1925, the annual report records, the number of out-patients increased by more than 14,000 to nearly 199,000. There was a deficit on the year's working of £2347.

ROYAL NATIONAL ORTHOPÆDIC HOSPITAL.—The twenty-first annual report lays stress upon the "urgent and vital need" of additional accommodation at the country branch at Stanmore, and £40,000 of the £87,000 required for extensions has still to be obtained.

AT the quarterly meeting of the directors of the Naval Medical Compassionate Fund held on April 23rd, with Surgeon Vice-Admiral Sir Joseph Chambers, Medical Director-General of the Navy, in the chair, the sum of £165 was distributed among the several applicants.

THE LEAGUE OF MERCY.—The Prince of Wales will be present at a ball to be held at Claridge's Hotel, London, on Tuesday, May 11th, in aid of the League of Mercy for the support of hospitals. Tickets may be obtained from the secretary at 20, Cockspur-street, London, S.W.1.

Messrs. Cassell and Co., Ltd., announce for early publication the third edition of "Diseases of the Nose and Throat," by Sir StClair Thomson. The work has been revised and considerably enlarged, and many new illustrations have been inserted.

DANGEROUS DRUGS ACTS.—Sir William Willcox will address the South-West London Chemists' Association at the Balham Constitutional Club, 221, Balham High-road, S.W., on Wednesday, May 5th, at 9 P.M., on the Dangerous Drugs Acts: their Application by the Physician and the Pharmacist. Medical men are invited.

PURE MILK FOR EDINBURGH HOSPITALS.—The Edinburgh Public Health Committee and the Treasurer's Committee have jointly decided that the corporation shall maintain a herd of tubercle-free cows to supply Grade A (Tuberculin-tested) milk to its various institutions. About 165 gallons will be required daily, but by reason of the difficulty of collecting a sufficient number of cows capable of giving milk that will pass the tuberculin test, some time must elapse before the arrangement can be carried out completely.

HERBERT JONES TESTIMONIAL FUND.—The following is a preliminary list of subscribers to this fund, which is being raised as a testimonial to the public services of Dr. Herbert Jones, medical officer of health for the Herefordshire combined districts, who is retiring on account of ill-health.

£5 5s.—Dr. J. B. Jenkins (Rhondda); Sir George Newman, K.C.B.

£3 3s.—The Editor of the *Medical Officer*.

£2 2s.—Messrs. Ainslie and Hepper (Hereford); Dr. J. R. Bulman (Hereford); Dr. Meredith Young (Chester).

£1 1s.—Drs. E. H. Baldock, A. Middleton Brown, M.O.H., W. B. Butler, Prof. J. T. Cash, E. W. DuBuisson, H. E. Durham, S. L. Corry, Hugh Fenton, Cyril Francis, J. Oswald Lane, J. H. Lilley, Peter Lowe, M.O.H., F. S. Machin, Ian W. McGregor, R. Wood Power, J. A. Prichard, B. W. Stallard, F. H. Thompson, Lieut.-Colonel Wanhill (all of Hereford); Dr. Basil Adams (Nieuport Sanatorium); J. Ridley Bailey (Bilston); T. W. Barlow, O.B.E., J. Blackett (Bath); G. F. Buchan (President of Society of Medical Officers of Health); W. H. Cam (Ross); S. Child (Horsham); H. C. Clark (Wellington); J. Stephenson Clarke (Weobley); Alfred Cox, O.B.E. (Medical Secretary, B.M.A.); W. Allen Daley (Hull); Q. R. Darling (Eardisley); W. B. Darroll (Leintwardine); W. S. Davies (Bristol); G. W. Dryland (Kington); A. B. Dunne (Doncaster); C. D. Edwards (Kington); H. R. R. Fowler (Ledbury); R. P. Garrow (Chesterfield); A. Ll. B. Green (Ross); T. L. Hall (Dilwyn); Prof. I. Walker Hall (Bristol); Richard Harding (Kington); Mr. W. E. Hempson (Tunbridge Wells); Drs. F. C. H. Home (Tarrington); W. J. Howarth (London); C. W. Hutt (London); T. A. Jones (Ledbury); H. V. Lamb (Leominster); A. W. McMichael (Vowchurch); J. W. Miller (Llandrindod Wells); E. A. Milner (Kington); W. H. Morgan (Ewyas Harold); Sir Arthur Newsholme, K.C.B.; Drs. Thomas Orr (Ealing); Norman H. Pike (Cheltenham); H. B. Pope (Clifton); A. E. Porter (Reigate); K. G. Salmon (Finsbury Park); Charles Sanders (Carshalton); J. Grimmond Smith (Burghill); E. H. Snell (Coventry); John Steed (Staunton-on-Wye); Gerard Steel (Leominster); J. Lionel Stretton (Kidderminster); A. S. Underhill (Barnes); E. Walford (Walmer); A. M. Watts (Broadstairs); James Wheatley (Shrewsbury); E. G. H. Williams (Colwall); Mary Williams (Colwall); J. B. Yeoman (Birkenhead); per Dr. J. B. Jenkins—Dr. W. E. Thomas, Messrs. Octavius Thomas, Evan Llywelyn, J. Towy Davies, Gwilyn Reed, and James Williams (all of Rhondda).

£1.—Prof. A. E. Boycott, F.R.S. (London); Dr. T. F. Dewar (Edinburgh).

10s. 6d.—Drs. A. M. Humphry (Pontrilas); W. M. Lucas Johnstone (Newent); W. A. Murphy (Brymenin).

The fund will remain open until the end of May. Subscriptions should be sent to Dr. John Steed, Staunton-on-Wye, Hereford.

THE Home Secretary has appointed Lieut.-Col. John Allan Anderson, M.B., to be an inspector for the purpose of the Cruelty to Animals Act, 1876.

Dr. Henry Renney, medical officer of health for the borough and port of Sunderland, died on April 24th, after several months' illness, at the age of 66.

HULL ROYAL INFIRMARY.—At the annual meeting of Hull Royal Infirmary it was stated that of the total number of 37,334 patients treated in 1925, 20,048 were casualty cases. This is 54 daily, and 2563 more than in 1924. A scheme has been approved for enlarging the infirmary at a cost of £80,000.

GRESHAM COLLEGE.—Sir Robert Armstrong-Jones will deliver lectures on Physic on May 4th and the three following days at 6 P.M. at the Gresham College, Basinghall-street, London, E.C. The subjects of the lectures will be Tumours and Cancer, Arthritis and Rheumatism, Venereal Diseases, and Sleepy Sickness, and they will be open to the public.

LADIES' MEDICAL GOLFING ASSOCIATION.—The spring meeting held at Northwood Golf Club on April 27th was well attended. The Canny Ryall Cup was won by Dr. Joan Ross (99−24=75). Miss Edith Leitch won the scratch prize with a score of 84. Handicap prizes were given in three divisions as follows: Senior division, Mrs. Lewis Smith (86−8=78); second division, Mrs. F. de Paula (89−13=76); third division, Mrs. Dobell (106−28=78). Greensomes were played in the afternoon, the winning couple being Mrs. de Paula and Mrs. Hunter.

STRASBOURG: POST-GRADUATE COURSES.—A post-graduate course on Cancer is to be held by the medical faculty of Strasbourg from Oct. 18th to Nov. 6th, under the direction of Dr. Gunsett, director of the Centre anti-cancéreux, Hôpital Civil, Strasbourg, from whom particulars may be obtained.—A course on Pulmonary Tuberculosis and Diseases of the Respiratory Tract is also to be held by the faculty from Oct. 8th to 23rd. It has been arranged by Prof. G. Canuyt and Dr. E. Vaucher, and applications should be made to the latter at 8, quai Finkwiller, Strasbourg.

DONATIONS AND BEQUESTS.—The late Baron Leith of Fyvie left by will £1000 to Fyvie Cottage Hospital.—The West Kent General Hospital has received £1000 from Mr. George Foster Clark for the endowment of a cot in the children's ward to be called the George Foster Clark Cot. This sum was presented to Mr. Clark by the National Farmers' Union for his services as Hop Controller.—Mr. Charles Julius Meyer, barrister-at-law, Wallasey, Cheshire, left £2000 to the Victoria Central Hospital, Wallasey.—Mr. William George Lofthouse, Garston, Liverpool, gave on the death of his wife £2000 to Sir Alfred Jones Memorial Hospital to endow two beds, and £100 to the Garston and District Nursing Association.

SMOKE ABATEMENT IN MANCHESTER.—Dr. Veitch Clark, the medical officer of health of the city, has presented a report to the Public Health Committee regarding legislation for the abatement of the smoke evil. Any new smoke abatement Bill, he says, ought to ensure that dense smoke of any colour shall per se constitute a nuisance, of which no defence provided in other sections of the Bill shall be permissible; also that, apart from the penalty imposed on the first hearing of the case, there shall be a daily penalty of £10. As reheating, annealing, hardening, and forging of iron have been carried on in Manchester for many years without the production of dense smoke, it is recommended that none of these processes should be included in any modification of the regulations. Another suggestion is that the Government be requested to take into consideration the possibility of dealing with the smoke nuisance on the same lines as has been adopted in dealing with sewage—that is, by the provision of smoke boards with similar powers and duties to those imposed upon river boards.

CLOSING OF CANTON HOSPITAL.—We have received from Dr. James L. Maxwell, the executive secretary, on behalf of the Executive Committee of the China Medical Association, an official statement of the circumstances under which this hospital was forcibly closed at the beginning of March by the Miscellaneous Workmen's Labour Union of Canton. The Union demanded, among other things, an increase in the wages of all the workmen employed by the hospital; that no man should be dismissed without its approval; that when he was he should be paid a month's wages as a solatium; and that only members of the Union should be employed. The authorities of the hospital, which is "a private life-saving charitable institution," the working expenses of which last year exceeded the receipts by $20,000, refused these demands, thereupon the hospital was summarily closed by the Union. Light and water were cut off, and the sick inmates turned into the streets.

Medical Diary.

SOCIETIES.

ROYAL SOCIETY OF MEDICINE, 1, Wimpole-street, W.

MONDAY, May 3rd.—8.30 P.M., SOCIAL EVENING. 9.30 P.M., Sir Humphry Rolleston will give an illustrated address on Some Worthies of the Cambridge Medical School.

TUESDAY.—8.30 P.M., ORTHOPÆDICS (Cases at 5 P.M.). Annual General Meeting. Cases: Mr. Paul Bernard Roth: 1. Congenital Radio-ulnar Synostosis, occurring in Three Children in One Family, two of them with Absent Patellæ. 2. Case of Madelung's Deformity. Other cases will be shown.

WEDNESDAY.—8.30 P.M., SURGERY. Annual General Meeting. Dr. W. E. Gye: The Origin of Tumours.

THURSDAY.—8 P.M., OBSTETRICS AND GYNÆCOLOGY. Annual General Meeting. Short communications: Prof. H. Briggs: Pregnancy and Ascites. Dr. Herbert Spencer: Two Cases of Adeno-fibroma of the Ovary. Mr. F. J. McCann: A New Method of Cæsarean Section. Dr. J. Ford Anderson: On Total Transposition of the Viscera and its Clinical Importance.

FRIDAY.—5 P.M., LARYNGOLOGY (Cases at 4 P.M.). Annual General Meeting. Epidiascopic Demonstration by Dr. W. Jobson Horne. Cases will be shown by Mr. H. Bell Tawse, Dr. Dan McKenzie, Mr. Norman Patterson, Mr. F. J. Cleminson, Mr. Leslie Powell, and others. 7 P.M., ANÆSTHETICS. Annual General Meeting.

SATURDAY.—10.30 A.M., OTOLOGY (Cases at 9.45 A.M.). Annual General Meeting.

SATURDAY AND SUNDAY.—BALNEOLOGY AND CLIMATOLOGY. Annual Provincial Meeting at Llandrindod Wells. Fellows and Members who wish to attend should communicate with Dr. Ackerley, Llandrindod Wells, before May 6th, so that arrangements may be made with the Railway Company and for the hotel.

LECTURES, ADDRESSES, DEMONSTRATIONS, &c.

ROYAL COLLEGE OF PHYSICIANS, Pall Mall East, S.W.

TUESDAY, May 4th.—5 P.M., Prof. H. MacLean: Carbohydrate Metabolism in Health and Disease (First Oliver-Sharpey Lecture).

THURSDAY.—5 P.M. (last Oliver-Sharpey Lecture).

FELLOWSHIP OF MEDICINE AND POST-GRADUATE MEDICAL ASSOCIATION, 1, Wimpole-street, W.

MONDAY, May 3rd, to SATURDAY, May 8th.—Special afternoon demonstration in clinical surgery at the St. Mark's Hospital for Diseases of the Rectum on Wednesday, at 2.30 P.M.—CENTRAL LONDON THROAT, NOSE AND EAR HOSPITAL, Gray's Inn-road, W.C. Clinical and operative intensive course, first week.—LONDON LOCK HOSPITAL, Dean-street, W. Clinical work daily and formal lectures throughout the week as per syllabus.—ROYAL WATERLOO HOSPITAL, Waterloo-road, S.E. Special course in children and women's diseases.—ROYAL WESTMINSTER OPHTHALMIC HOSPITAL, Charing Cross, W.C. Afternoon course; clinical work daily and three demonstrations per week.—MAUDSLEY HOSPITAL, Denmark Hill, S.E. Lectures and demonstrations pertaining to Psychological medicine. Further information from the Secretary of the Fellowship of Medicine.

LONDON SCHOOL OF DERMATOLOGY, St. John's Hospital, Leicester-square, W.C.

TUESDAY, May 4th.—5 P.M., Dr. H. W. Barber: Alopecia Areata and Vitiligo.

THURSDAY.—5 P.M., Dr. A. M. H. Gray: The Sarcoids and Lupus Pernio.

ST. MARY'S HOSPITAL INSTITUTE OF PATHOLOGY.

THURSDAY, May 6th.—5 P.M., Prof. J. Barcroft: Recent Work on the Spleen.

MANCHESTER ROYAL INFIRMARY POST-GRADUATE COURSE.

TUESDAY, May 4th.—4.15 P.M., Mr. S. R. Wilson: Demonstration of the Use of Ethylene.

FRIDAY.—4.15 P.M., Dr. R. S. Paterson: X Ray Investigation of the Intestinal Tract.

ANCOATS HOSPITAL POST-GRADUATE LECTURES, Quay-street.

THURSDAY, May 6th.—4.15 P.M., Mr. McEvedy and Dr. Twining: The Surgical Dyspepsias.

MANCHESTER AND SALFORD HOSPITAL FOR SKIN DISEASES POST-GRADUATE COURSE.

THURSDAY, May 6th.—4.30 P.M., Dr. Gibson: Dermatological Therapeutics.

SHEFFIELD UNIVERSITY POST-GRADUATE CLINICS.

FRIDAY, May 7th.—3.30 P.M. (at the Royal Hospital), Prof. Hall: Medical Cases.

Appointments.

HALL, Prof. A. J., M.D. Camb., F.R.C.P. Lond., has been appointed Consulting Physician to the South Yorkshire Mental Hospital.

PEIRCE, E. R., M.R.C.S., L.R.C.P. Lond., an Assistant Port Medical Officer in Liverpool.

SIMPSON, G., M.B., B.S. Melb., M.R.C.P. Lond., Assistant Resident Medical Officer to Queen Charlotte's Maternity Hospital.

Vacancies.

For further information refer to the advertisement columns.

Beit Memorial Fellowships for Medical Research.—Jun. Fellows. £350.

Birmingham, Selly Oak Hospital.—Res. Jun. Asst. M.O. £300.

Bradford Royal Eye and Ear Hospital.—Res. H.S. £120.

Brighton, Royal Sussex County Hospital.—H.S. £150.

Bristol University.—Lecturer in Forensic Medicine and Toxicology. Also Lecturer in Public Health.

Cancer Hospital, Fulham-road, S.W.—H.S. At rate of £100.

Cardiff, Royal Hamadryad Seamen's Hospital.—Hon. Consulting P.

Central London Throat, Nose and Ear Hospital, Gray's Inn-road, W.C.—Hon. Asst. Out-patient Reg.

Chester County Mental Hospital.—Fourth Asst. M.O. £300.

Dagenham Sanatorium, Dagenham, Essex.—Asst. M.O. £250.

Dublin, St. Vincent's Hospital.—Asst. S. to Out-patient Dept.

Durham County Mental Hospital.—Second Asst. M.O. £500.

Fulham Metropolitan Borough.—M.O.H. £1100.

Greenwich, Dreadnought Hospital.—Med. Supt. £300.

Hampstead General and North-West London Hospital, Haverstock Hill, N.W.—H.S. and Cas. Surg. O. Each at rate of £100.

Hospital for Epilepsy and Paralysis, Maida Vale, W.—Med. Reg. £100.

Hull City Education Committee.—Chief Asst. Sch. M.O. £750.

Leicester City Isolation Hospital and Sanatorium.—Res. Med. Supt. £900.

Leicestershire and Rutland Mental Hospital, Narborough, near Leicester.—Second Asst. M.O. £350.

Liverpool, Eye and Ear Infirmary, Myrtle-street.—Hon. Aural S.

Liverpool Hospital for Women, Shaw-street, Samaritan Hospital for Women.—Hon. Asst. S.

London Fever Hospital, Islington, N.—Asst. Res. M.O. £250.

Manchester, Royal Eye Hospital.—Jun. H.S. £120.

Manchester Royal Infirmary.—Med. Reg. £150.

Metropolitan Asylums Board, Mental Hospitals Service.—Second Asst. M.O. £560. Also Jun. Asst. M.O. £500.

Pendleton, Municipal Maternity Home and Babies Hospital.—Asst. Child Welfare M.O. £619 13s.

Penshurst, Kent, Cassel Hospital for Functional Nervous Disorders.—Jun. Res. M.O. £250.

Queen Charlotte's Maternity Hospital, Marylebone, N.W.—M.O. for Antenatal Dept.

Royal Northern Hospital, Holloway, N.—Cas. O. and H.S. At rate of £90 and £70 respectively. Also Surg. and Phys.

St. George-in-the-East Hospital, Raine-street, E.—First Asst. M.O. and Second Asst. M.O. At rate of £600 and £450 respectively.

St. Mary's Hospital, W.—First Asst. Pathologist. £500.

St. Mary's Hospital for Women and Children, Plaistow, E.—Res. M.O. At rate of £175.

Salisbury General Infirmary.—H.S. £150.

Sheffield, Royal Hospital.—Asst. Cas. O. £80.

Sheffield Royal Infirmary.—Jun. Aural and Ophthalmic H.S. £80.

Shrewsbury, Eye, Ear and Throat Hospital for Shropshire and Wales.—H.S. £200.

Swansea General and Eye Hospital.—Sen. Res. O. £350. Also H.P. £150.

Throat Hospital, Golden-square, W.—Res. H.S. £100.

University College Hospital, Gower-street, W.C.—Harker Smith Reg. £250. Also Obstetric Reg. £125.

Walthamstow, Wanstead, and Leyton Hospital, Orford-road, E.—Jun. H.S. At rate of £100.

The Chief Inspector of Factories announces a vacancy for a Certifying Factory Surgeon at Carnarvon (Carnarvonshire).

Births, Marriages, and Deaths.

BIRTHS.

MCGRIGOR.—On April 16th, at Welbeck-street, W., the wife of Major D. B. McGrigor, O.B.E., R.A.M.C., of a daughter.

MORLEY.—On April 27th, at 8, Burlington-road, Withington, Manchester, to Mr. and Mrs. John Morley—a daughter.

OLDHAM.—On April 13th, at Calton Cottage, Morecambe, Lancashire, the wife of Dr. T. V. Oldham, of a son and a daughter.

MARRIAGES.

MELVILLE—RUSSELL.—On April 19th, at the Parish Church, Stoke-in-Teignhead, South Devon, William Spence Melville, M.B., Ch.B., to Mabelle Annie, only daughter of Arthur B. Russell, of Dunmore-road, Wimbledon.

WALKER—WILSON.—On April 24th, at All Saints', Fulham, Kenneth Macfarlane Walker, F.R.C.S., to Eileen Marjorie Wilson, only daughter of Mr. and Mrs. F. H. Wilson, of Marlborough Mansions, Cannon-hill, N.W.

DEATHS.

HAMILTON.—On April 20th, at his residence, Brentwood, Prestwich Park, Manchester, Thomas Hamilton, L.R.C.P., M.R.C.S.

HOPE.—On April 18th, at Southsea, John Hope, M.D., L.R.C.S. Edin., formerly of Chobham, aged 86 years.

JOHNSTON.—On April 23rd, at a nursing home in London, Col. Charles Arthur Johnston, C.B., D.S.O., I.M.S., aged 59.

MAURICE.—On April 22nd, at Craven-road, Reading, William James Maurice, M.B. Oxf., aged 68.

WHITE.—On April 19th, at the Barn House, Chinnor, Oxon., Edgar Ramsay White, F.R.C.S., late of Deal.

N.B.—A fee of 7s. 6d is charged for the Insertion of Notices of Births, Marriages, and Deaths.

Notes, Comments, and Abstracts.

APPLICABILITY OF DREYER'S ANTHROPOMETRIC FORMULÆ TO BOYS.

BY D. CARADOG JONES.

STATISTICS of height, weight, and chest girth have been collected and their relations studied scientifically from the time of Quetelet onwards. Indeed, he may be regarded as the founder of anthropometry. Measurements of vital capacity—the amount of air an individual can expel from his lungs after a deep breath—were added when Hutchinson began his work. Many formulæ have been proposed by various writers to connect weight with height, vital capacity with weight, and so on. Among the most attractive of recent date are those due to Prof. Dreyer, of Oxford.

Under the title of "The Assessment of Physical Fitness" Dreyer has published tables which aim "to supply medical men and others interested in the subject with a method . . . whereby physical fitness can be assessed on the basis of a few simple measurements." These tables depend (p. 20) upon the following ratio formulæ for determining V (vital capacity) from W (weight) and λ (stem length, or height of trunk alone) in the case of males:—

$$V = W^{0\cdot72}/0\cdot69 = \lambda^{2\cdot257}/6\cdot1172$$

—i.e., formulæ of the type

$$V = W^{n}/K,\ V = \lambda^{n}/K,$$

in which n and K are called "constants" by Dreyer. When in the above formulæ approximate values are substituted for n—namely, $\frac{3}{4}$ for 0·72 and 2 for 2·257, he found that they became

$$V = W^{\frac{3}{4}}/0\cdot380 = \lambda^{2}/1\cdot90.*$$

In his table-book Dreyer states: "While it cannot be claimed that the constants employed . . . are to be regarded as fixed and final, it can be stated that any changes they may have to undergo in the future, as a result of the further accumulation of data, in normal adolescents . . . will be small and not likely to impair their present validity from the practical point of view." It will be noted that the author, in the passage quoted, appears to limit the application of his ratios to normal adolescents, but on the next page he remarks that "for the range of indices given, it has been found that the question of age is of little or no importance up to an age of about 50 years." Moreover, out of ten examples to illustrate the use of the ratios, at the end of the same book, he takes one male aged 8 years, one aged 9, two aged 13, and one female aged 9; also, in a study of pulmonary tuberculosis† he applies the ratios in several instances to quite young boys and girls. It is therefore important to consider the foundation on which the constancy of the K's rests and with that in view I have tested it on the average measurements of a number of boys between the ages of 11 and 19 in a large grammar school.

The original data which led to the adoption of these ratios by Dreyer were the result of observations made on "16 men and boys who were carefully selected on account of their physical fitness and covered as widely different a range in weight, height, &c., as possible"; their ages varied from about 13 to 52 years.‡ In the same paper the author adds that "before accepting these constants" (i.e., the values he had found for the n's and K's in the case of the 16 men and boys, and in a few other groups to be noticed presently) "as valid standards, it became important to see how they would compare with the constants that could be obtained from Schuster's extensive series of measurements of vital capacity in 959 Oxford undergraduates." He then proceeds to calculate from Schuster's data the K's in the ratios

$$K = W^{0\cdot72}/V;\ K_1 = W^{\frac{3}{4}}/V;\ K_2 = \lambda^{2}/V.$$

Table I., the details of which are taken from THE LANCET article quoted above, exhibits the result of such calculations for Dreyer's own groups as well as for the Oxford data.

The striking fact about this table is the practically exact agreement between the values for the K's in the first and last groups, since Schuster's observations were quite independent of Dreyer's. On examining Schuster's data, however, it is found that certain allowances had to be made before calculating the ratios:—

(*a*) The weight in Dreyer's ratios is net weight without clothing, whereas Schuster weighed his men fully dressed but without boots and without coats. For this Dreyer

* THE LANCET, 1919, ii., 229.
† Ibid., 1920, i., 1212.
‡ Ibid., 1919, ii., 227.

appears to have allowed weights varying from 2650 to 2760 g. in Schuster's six age-groups; the average allowance, weighted according to numbers in the different age-groups, is 2720 g. or 6 lb. almost exactly.

(*b*) Dreyer measured the stem length in a perfectly definite manner. Schuster seems to have measured the sitting height, though only the figures for full stature and length of leg are given in the account of his observations in *Biometrika* (vol. viii.). By subtracting the one from the other we get the body length which exceeds the number taken by Dreyer for stem length at each age by 2·7 cm. This deduction is presumably necessary to make the two methods of measurement comparable.

(*c*) Dreyer took five measurements of V for each person and chose the highest of the five readings, whereas Schuster took three readings and chose their mean. Dreyer himself states that in a large number of observations he found the highest reading was about 5 per cent. greater than the mean of five readings.

I have re-calculated the K's for Schuster's data: (*a*) making an exact allowance of 6 lb. for weight of clothes in each age-group, (*b*) accepting Dreyer's reduction of Schuster's figures to get the stem length, and (*c*) adding 5 per cent. to Schuster's figures for vital capacity. Table II. shows my results for each age-group, and I have included for comparison the values of the same constants for eight groups of boys, 1110 in all, varying in age from 11 to 19 years. The last row of Table II. differs appreciably from the last row of Table I.

TABLE I.—*The K Constants in Dreyer's and Schuster's Observations.*

No.*	Description of group.	$K = W^{0\cdot72}/V$	$K_1 = W^{\frac{2}{3}}/V$	$K_2 = \lambda^2/V$
16	Men and boys selected for physical fitness.	0·690	0·380	1·90
14	Oxford undergraduates.	—	0·380	—
7	Boy scouts.	—	0·390	—
12	Men (mixed upper classes).	—	0·416	—
12	Men (mixed lower classes).	—	0·445	—
12	Females (mixed classes).	—	0·493	—
959	Schuster's Oxford undergraduates.	0·690	0·381	1·90

* Number in group.

TABLE II.—*Variation of the K "Constants" in Dreyer's Formulæ with Age.*

1. *Grammar School-boys.*

Age in years.	No. in group.	$K = W^{0\cdot72}/V$.	$K_1 = W^{\frac{2}{3}}/V$.	$K_2 = \lambda^2/V$.
11–	29	0·834	0·479	2·45
12–	112	0·781	0·447	2·29
13–	173	0·800	0·445	2·27
14–	255	0·783	0·442	2·23
15–	263	0·743	0·417	2·14
16–	173	0·736	0·411	2·10
17–	80	0·718	0·400	2·16
18–	25	0·658	0·366	1·88
11–19	1110	0·763	0·430	2·18

2. *Oxford Undergraduates.*

18–	129	0·659	0·365	1·78
19–	330	0·659	0·365	1·82
20–	209	0·659	0·365	1·82
21–	137	0·647	0·358	1·78
22–	95	0·657	0·364	1·81
23–	59	0·637	0·352	1·76
18–24 and over	959	0·656	0·363	1·81

It is clear from Dreyer's own observations that the K's vary with the class to which the ratios are applied (see, for example, Table I.). This he himself admits, and he uses the variation to differentiate between one class and another as to physical fitness. My concern here is to point out that, *even in dealing with the same class, the K's are not constants: they are functions of age as well as of class.* To prove this, the 1110 boys have been arranged in age-groups and the mean values of W, V, and λ found for each group; the resulting K's are seen to decrease as the age increases, and it is particularly noteworthy that the values where one set of observations (grammar school-boys) ends agree closely with the values where the other set of entirely independent observations (Schuster's undergraduates) begins.

The conclusion to which we are led is that, in the ratio formulæ discussed, expressing V in terms of W and in terms of λ respectively, the so-called "constant" K is really a function of the age of the subject; prior to full maturity, at all events, K tends to decrease as age advances.

Another formula used by Prof. Dreyer, relating weight to stature, seems to be subject to less variation with age in dealing with the averages of large numbers (see *Nature*, April 10th, 1926; also a complete account of Dr. Mumford's work at the Manchester Grammar School concerning health and growth, to be shortly published).

I am indebted to Miss P. M. Borthwick, on the staff of Manchester University, for kindly verifying all my calculations; and to Dr. Alfred Mumford, medical officer of Manchester Grammar School, for the data relating to boys.

THE MEDICAL SITUATION IN CHINA.*

BY H. JOCELYN SMYLY, M.D. DUB., F.R.C.S.I.,
PEKING UNION MEDICAL COLLEGE.

A REPORT published by a Commission sent to China by the Rockefeller Foundation in 1914 to make a survey of medical conditions, stated that outside the Treaty ports there was practically no modern medical service except that of the mission hospitals. This remains substantially true to-day, the reason being that although Chinese are returning in increasing numbers to their own country, equipped with a training in modern medicine gained abroad, they find ample scope for their service amongst their compatriots in such places as Shanghai and Tientsin; whereas, the inhabitants of the inland cities are not yet sufficiently convinced of the value of these methods to pay the large cost of modern hospitals, nor to commit themselves to the care of a scientific physician without simultaneously calling in as many of the old style practitioners as they can afford to pay. In these circumstances the mission hospital, in addition to the primary religious purpose which it is founded to promote, is a pioneer also in scientific practice, and it unquestionably provides the young Chinese doctor outside of the modern cities with the best, if not the only, opportunity for giving in an adequate way the service for which he has been trained.

It is true that in the past, and to a great extent to-day, these hospitals have been lamentably ill-equipped owing to lack of funds, but a general steady improvement in their efficiency is being made, and a certain number are excellent examples of what a modern hospital should be; they are housed in good buildings, provided with a regular nursing service, a laboratory, operating and X ray plant, and have good sanitation, kitchen and laundry. The Americans take a lead in such development, but some British hospitals hold a good position in this category, such as the new S.P.G. Hospital in the city of Tatungfu in the inland province of Shansi. Their effectiveness and the measure of local support which they receive is largely proportional to the efficiency of their organisation and the amount of foreign money invested in them. This example is being followed by enlightened Chinese, who have erected a thoroughly up-to-date model hospital in Peking, and others in Canton and Shanghai.

For the provision of modern medical service to the country as a whole, medical schools are essential. A certain number of Chinese schools are in existence, but although they are improving they are, on the whole, of a low standard. The missionary forces at work in the country have also about half a dozen medical schools. The best of these is at Tsinanfu, Shantung. This school, while not first class, gives a good training and is steadily improving year by year. It is operated by a group of nine missionary societies—four British, one Canadian, and four American—and is incorporated under a Canadian charter. The faculty numbers 28, and, including nursing and house staff, there is a total full-time qualified staff of 51. The annual cost, including salaries, is £21,000.

In Peking the Rockefeller Foundation has a medical school, the Peking Union Medical College. This institution, originally founded in 1906 by missionaries, maintains its connexion with the six missionary societies who originally conducted it; it is owned and supported, however, by the Rockefeller Foundation. The college is palatially housed and liberally equipped with every provision for scientific teaching and research. There is a full-time medical teaching staff of about 60, in addition to the resident medical staff of the hospital, a nursing school, and the administrative departments. The annual cost is about £160,000, including salaries. Each of these schools has about 100 students, and both are co-educational.

Public health work is coming to be recognised as one of the most important lines of development in medical work in China. In this again missionaries have been for several

* Being an abstract of an address delivered at a meeting of the Society for the Propagation of the Gospel held on April 21st.

years the pioneers. A union of six organisations—the Y.M.C.A., Y.W.C.A., China Medical Association (Missionary), National Medical Association (Chinese), China Christian Educational Association, and the Nurses' Association of China—has organised a council on public health education in Shanghai under the direction of Dr. W. W. Peter. This body works mainly, as its name implies, in popular education in hygiene, taking the schools as its most effective sphere for propaganda. It also carries out and stimulates the routine examination of students, and other work. Occasionally it makes its appeal to the masses, as, for instance, in Foochow following an epidemic of cholera in 1919, when the number of cases was estimated at 19,000 with a severe death-rate. A local committee, with the advice and assistance of the Council on Health Education, organised a week of publicity in June, 1920; 247 meetings were held, at which 110,000 by count were present. In addition a parade traversed 90 per cent. of the main thoroughfares for six days presenting in striking exhibits, mounted on floats, the right and wrong ways of dealing with water, food, and human excreta. As a result only a few sporadic cases of cholera occurred that summer, which investigation showed to have been brought in from outside. There was cholera north and south of Foochow and in Formosa across the Straits.

An appeal has been issued by the National Medical Association (a purely Chinese association of modern physicians), meeting in conference in Shanghai last February, which is worth quoting. Among the resolutions passed were the following:—

That the National Medical Association of China hereby expresses its great appreciation to the British Government and people for the return of their share of the Boxer indemnity, and at the same time expresses the hope that a substantial portion of the fund may be allocated for the specific purpose of promoting public health activities in China.

That since Great Britain has been a pioneer in the field of public health, whose present leadership is attested by the low mortality and morbidity rates, by the development of the most modern public health practices and governmental machinery culminating in the establishment of a Ministry of Health, the Chinese people may confidently look to Great Britain for guidance and help in promoting public health in China.

These resolutions were passed following an address by Dr. F. C. Yen, brother of the Minister-elect to Great Britain. It is to be hoped that they will receive favourable consideration from the Commission appointed from this country to decide on the appropriation of the return portion of the indemnity.

POLAND, TO-DAY AND TO-MORROW.

FEW nations have received more sympathy than Poland, but seldom has sympathy been so ineffective. To the Englishman the country is inexpressibly remote and its political position since the war has unfortunately done little to foster understanding or encourage everyday coöperation. On another page we record the opening of a school of hygiene at Warsaw and quote the sentiments which animate the public health authorities in Poland. The development of a health policy is only one of the ways in which a nation once great is striving to regain the civilisation of which it has been baulked, and it is in every way desirable that something of the progress made and forthcoming should be understood in this country. We welcome, therefore, the appearance of "The Polish Handbook" (published in English from 47A, Portland-place, London, W. 1, at 10*s.* 6*d.* net), which contains a good map and some 700 pages of well-arranged and readable information. This "guide to the country and resources of the Republic of Poland," printed by Eyre and Spottiswoode, Ltd., is just what is wanted to interest business men, travellers, or ordinary people in the Poland of to-day. Its editor apologises for gaps in the information provided, but this is inevitable in describing a State which has been in independent existence for only six years; and with him we hope that a second edition will soon give an opportunity of remedying defects. Much information of interest to medical men will be found in the sections on public health, housing, and labour and social welfare.

R.A.M.C. TRAINING MANUAL.

THE teaching of the Royal Army Medical Corps was so sound that much of it survived the test of the Great War. The latest edition [1] of the Training Manual contains new matter on gas poisoning, carriage of stretchers on the shoulder, convalescent camps, and aseptic surgery. In the previous issue two reasons for the existence of the Corps were given: (1) the prevention of disease and (2) the care and treatment of the sick and wounded; to these are now added (3) the collection and evacuation of sick and wounded, and (4) the preparation of professional records about them. These four purposes are kept steadily in view all through the Manual, and it is further impressed on all ranks that they must not only take the greatest care of their wounded comrades, but forthwith record their names, lest they lose pensions; not only do their best to preserve the persons of their patients, but also their personal effects, of which a careful list must be made at once to save trouble later. The account of the new organisation of the Corps in war is clearly detailed, and the reader in search of examples will find them in the Medical History of the War. The paragraph on food values disappoints. Is it much use to an orderly to know that carbohydrate and protein yield 4, fats 9 calories per gramme, when he is not told the composition of the foods which are given in ounces? The U.S. Navy Hospital Corps Handbook does better than this. The old picture of intestinal villi has gone, and instead there is a good picture of the teeth, and a page of valuable advice on dental hygiene. The book is a clear statement of guiding principles and well worth its modest price.

[1] Royal Army Medical Corps Training. 1925. H.M. Stationery Office. 1925. Pp. 383. 1*s.*

AFRICAN MEDICAL REMEDIES AND CHARMS.

THE department of pharmacology of the University of Witwatersrand some time ago began a detailed investigation into the medicinal value of plants and other materials. The head of the department, Prof. J. M. Watt, sent out several thousand questionnaires to all parts of the sub-continent, inviting any who were interested to submit specimens. His most sanguine expectations have been exceeded; from Northern Rhodesia alone no fewer than 1000 specimens have been received, and they have come in from all over the Union and from distant parts. The object of the investigation is to ascertain the value of charms, poisons, and homely remedies, with the idea of finding some whose virtues are at present unknown to the medical profession. It will take time to deal with the material now available and no results of this interesting study are likely to be published in the near future.

THE HANDWRITING OF MEDICAL MEN AND STUDENTS.

To the Editor of THE LANCET.

SIR,—Might not the examining boards, or the General Medical Council, be warned by *Punch* this week and do something to try and improve the handwriting of medical men and students? This thought will probably have occurred to others besides myself. Very few of us always write a good and legible hand, and many of us often write badly; but others *invariably* write so very badly that they thereby cause their fellow-men much trouble and loss of time. Consultants often waste much valuable time in trying to read the letters, and especially the names, of medical men who have written to them for appointments. They are often obliged in the end to cut out the signature of the medical practitioner from his letter and to gum it on their reply envelope. Also, general practitioners are often annoyed by badly-written prescriptions from consultants, which they cannot possibly make out; and it is left for the dispensing chemist to do the best he can. This bad writing often leads to mistakes; some irritating, others amusing, others serious.

Examiners in reading over the final examination papers not infrequently meet with papers which are so very badly written that in many parts they are illegible. Yet these candidates have passed the entrance examination in general education and the ability to write a legible hand ought to be one of the requirements of such examinations. Students should remember that if they do not take the trouble to write a legible hand, examiners may not take the trouble to read all parts of their papers, and hence many marks may be lost. Examiners have usually to read through a large number of papers in a very limited time, and if a candidate's writing is so bad that it can only be made out by the use of a lens, or by prolonged consideration, it is evident that however patient the examiner may be, he is obliged, by time-limits, to pass over the very badly-written parts of the answers. (Another common defect is the frequent use by candidates of abbreviations, such as A.B., A.M.P., &c., which are often puzzling at first sight.)

It is difficult to know how to deal with these extremely bad writers. But so many of them could become good writers after lessons with a writing master for a short time; and this would be of great service to them for the rest of life. One British examining board has a regulation that marks will be deducted for bad writing; but candidates who have written badly will not know of the reduction in their marks, and will make no efforts to improve. If examining boards were to make a regulation that their examiners when sending up the results of the final examinations should report those candidates whose writing was extremely bad, then these men might be asked to take lessons from a writing master, and to give evidence that they can write a more legible hand before the degree or diploma is granted. Or the examining boards might report to the General Medical Council the names of successful candidates whose writing was extremely bad; and the Medical Council